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(71) Applicant : FUJI XEROX CO LTD

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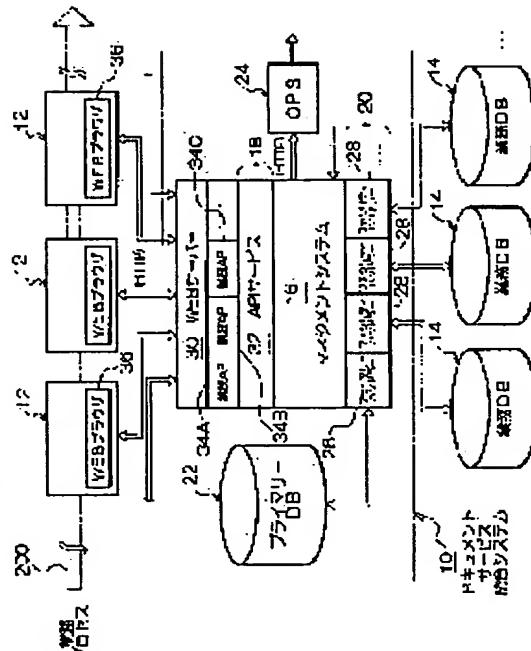
(72) Inventor : NISHIDA KENICHI
YANAI KYOSUKE

(54) DOCUMENT SERVICE INTEGRATION SYSTEM

(57) Abstract:

PROBLEM TO BE SOLVED: To unitarily manage documents by performing integrated management while mutually linking various existent applications and various existent data bases.

SOLUTION: A first interface part 18 is composed of an API service 32 and establishes an interface between a management system 16 and a job application 34. A WEB browser 36 and a WEB server 30 establish a user interface. A second interface part 20 establishes an interface between the management system 16 and a job data base 14. The management system 16 carries out service management and document management according to various definitions based on a document model or process model. Plural services independently existent up to the moment are integrated and plural documents are managed as a document set for the unit of a job process.



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(71) 【出願人】

【識別番号】 000005496

【氏名又は名称】 富士ゼロックス株式会社

【住所又は居所】 東京都港区赤坂二丁目17番22号

(72) 【発明者】

【氏名】 西田 賢一

【住所又は居所】 神奈川県川崎市高津区坂戸3丁目2番1号 K S P R & D ビジネスパークビル 富士ゼロックス株式会社内

(72) 【発明者】

【氏名】 屋内 恭輔

【住所又は居所】 神奈川県川崎市高津区坂戸3丁目2番1号 K S P R & D ビジネスパークビル 富士ゼロックス株式会社内

(74) 【代理人】

【識別番号】 100075258

【弁理士】

【氏名又は名称】吉田 研二（外2名）

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(57) 【要約】

【課題】既存の多様のアプリケーションおよび既存の多様のデータベースを相互につなげて統合管理し、ドキュメントの一元管理を実現する。

【解決手段】第1インターフェイス部18は、APIサービス32で構成され、マネジメントシステム16と業務アプリケーション34との間のインターフェイスを確立する。WEBブラウザ36とWEBサーバー30はユーザーインターフェイスを確立する。第2インターフェイス部20はマネジメントシステム16と業務データベース14との間のインターフェイスを確立する。マネジメントシステム16はドキュメントモデルやプロセスモデルに基づく各種の定義にしたがってサービス管理およびドキュメント管理を遂行する。今まで独立に存在していた複数のサービスが統合され、複数のドキュメントが業務プロセス単位でドキュメントセットとして管理される。

【特許請求の範囲】

【請求項1】ドキュメントを利用する少なくとも1つのクライアントと、ドキュメントを管理する少なくとも1つのデータベースと、の間に設けられたシステムであって、前記データベースによって管理されている各種のドキュメントを業務プロセスに応じて統合管理する管理部と、前記クライアントからのドキュメント操作要求を処理する処理部と、を有するマネジメント部と、前記クライアントと前記マネジメント部との間のインターフェイスを確立する第1インターフェイス部と、前記データベースと前記マネジメント部との間のインターフェイスを確立する第2インターフェイス部と、を含むことを特徴とするドキュメントサービス統合システム。

【請求項2】請求項1記載のシステムにおいて、前記管理部は、業務プロセスごとに複数のドキュメントの関連付け定義が格納された第1テーブルを有し、前記処理部は、前記関連付け定義に従って、前記ドキュメント操作要求を処理することを特徴とするドキュメン

トサービス統合システム。

【請求項 3】 請求項 2 記載のシステムにおいて、前記処理部は、前記関連付け定義に従って、ドキュメント検索を行う機能を有することを特徴とするドキュメントサービス統合システム。

【請求項 4】 請求項 2 記載のシステムにおいて、前記処理部は、前記関連付け定義に従って、相互に関連付けされた複数のドキュメントを一括印刷する機能を有することを特徴とするドキュメントサービス統合システム。

【請求項 5】 請求項 1 記載のシステムにおいて、前記管理部は、業務プロセスにおけるステータス遷移定義が格納された第 2 テーブルを有し、前記処理部は、前記ステータス遷移定義に従って、前記ドキュメント操作要求を処理することを特徴とするドキュメントサービス統合システム。

【請求項 6】 請求項 5 記載のシステムにおいて、前記管理部は、役割名とユーザー名との対応関係の定義が格納された第 3 テーブルを有し、前記ステータス遷移定義には前記役割名を記述可能であり、前記処理部は、前記ステータス遷移定義及び前記対応関係に従って、前記ドキュメント操作要求を処理することを特徴とするドキュメントサービス統合システム。

【請求項 7】 請求項 1 記載のシステムにおいて、前記管理部は、複数のアプリケーション間におけるデータ形式変換の定義が格納された第 4 テーブルを有し、前記処理部は、前記データ形式変換の定義に従って、第 1 のアプリケーションで生成された第 1 データ形式のドキュメントを第 2 形式のドキュメントに変換し、当該第 2 データ形式のドキュメントを第 2 のアプリケーションへ渡すことを特徴とするドキュメントサービス統合システム。

【請求項 8】 請求項 1 記載のシステムにおいて、前記管理部は、各ドキュメントの公開範囲の定義が格納された第 5 テーブルを有し、前記処理部は、前記公開範囲の定義に従って、ドキュメントに対するアクセス制限を行うことを特徴とするドキュメントサービス統合システム。

【請求項 9】 請求項 1 記載のシステムにおいて、前記マネジメント部は、業務プロセスにおける一連のドキュメント操作に関するログを記録するログ記録部を有することを特徴とするドキュメントサービス統合システム。

【請求項 10】 ドキュメントを各種アプリケーション上で利用する複数のクライアントに接続可能であり、かつ、ドキュメントを管理する複数のデータベースに接続可能であるシステムであって、前記データベースによって管理されている各種のドキュメントを業務プロセスに応じて統合管理する管理部と、前記クライアントからのドキュメント操作要求を処理する処理部と、を有するマネジメント部と、前記アプリケーションと前記マネジメント部との間のインターフェイスを確立する第 1 インターフェイス部と、前記データベースと前記マネジメント部との間のインターフェイスを確立する第 2 インターフェイス部と、を含むことを特徴とするドキュメントサービス統合システム。

【請求項 1 1】 請求項 1 0 記載のシステムにおいて、前記第 1 インターフェイス部は、所定のアプリケーションインターフェイス規約に則った命令を解釈する機能を有することを特徴とするドキュメントサービス統合システム。

【請求項 1 2】 請求項 1 0 記載のシステムにおいて、前記第 2 インターフェイス部は、個々のデータベースに対応して設けられた複数のファシリティハンドラによって構成されることを特徴とするドキュメントサービス統合システム。

【請求項 1 3】 ドキュメントを利用する少なくとも 1 つのクライアントと、ドキュメントを管理する少なくとも 1 つのデータベースと、の間に設けられたドキュメントサービス統合システムで利用されるコンピュータ読取り可能なプログラムを格納した媒体であって、前記プログラムが、前記データベースによって管理されている各種のドキュメントを業務プロセスに応じて管理する管理機能と、前記クライアントからのドキュメント操作要求を処理する処理機能と、を有することを特徴とするプログラム記憶媒体。

【発明の詳細な説明】

【0 0 0 1】

【発明の属する技術分野】 本発明はドキュメントサービス統合システムに関し、特に複数のデータベースによって管理されている多様な業務ドキュメントを業務プロセスに従って複数のクライアントで利用するためのシステムに関する。

【0 0 0 2】

【従来の技術及びその課題】 例えば、製品の製造・販売を行う場合における一連の業務は複数の工程から成り立っている。一例をあげれば、その一連の業務は、提案企画、設計、承認、生産、物流、販売、サポートなどの各工程で構成される。一般に、各工程は別々の部門が担当し、また、各部門ごとに異なるシステムが設置されている場合が多い。例えば、設計部門には設計図などを取り扱うシステムが設置され、販売部門には売上情報などを含む営業情報を管理するシステムが設置されている。

【0 0 0 3】 近年、インターネットの普及により、物理的には会社内における各システムが統合されつつあるが、一連の業務プロセス上における多様なシステムを統合し、しかも業務プロセス全体を総合的にサポート可能なシステムは未だ提供されていない。

【0 0 0 4】 ところで、業務プロセスを管理する方式として、いわゆるワークフローシステムが知られている。この方式では、所定の帳票（核となる業務ドキュメント）を各工程間で順次移送し、これにより業務の進捗が管理される。例えば、設計変更の業務であれば、帳票としての所定のリクエストシートが最初に作成され、その回付によって設計、承認などの各工程が段階的に進行する。なお、そのような帳票は紙として担当者間で回付されるのが通常であるが、近年、電子メールなどを利用し電子ドキュメントという形式で回付す

る方式も採用されている。いずれにしても、業務進行の核となるのは当該帳票であり、そのドキュメントの所在あるいはステータスが当該業務の進捗を反映している。

【0005】上記業務ドキュメントには、関連する文書、統計資料、図面などの各種のデータが添付される場合が多い。しかし、上記のように、従来においては、一連の業務プロセスが複数のサービス、具体的にはアプリケーション（アプリケーションプログラム）やデータベース（データベースシステム）の上に構築されていたため、個別システム間で情報共有したり交換したりすることは困難であった。このため、実際には、必要に応じて、当該業務に関連する情報を紙に印刷し、それを添付することが行われていた。

【0006】もちろん、各システム間にそれらをつなぐ特別のソフトウェアを構築すれば、個別システム間のつながりを確保することが可能である。しかし、そのようなカスタマイズは多くの費用負担を発生させ、また、個別システムの仕様変更などに柔軟に対応するのは困難である。

【0007】特開平10-326314号公報には、ワークフロー管理システムが開示されている。このシステムでは、処理の内容、手順、担当者、それらの決定規則を記述したプロセス定義、及び、ドキュメントの回覧状況及び処理状況などを含むフロー制御情報に従って、処理対象であるドキュメントが各担当者間で電子的に回覧されている。ここで、プロセス定義は、ドキュメントのステータスを遷移させる場合に参照される。

【0008】また、特開平9-282250号公報には、電子ドキュメント中にそのドキュメントの回覧経路を記述することが開示されている。特開平8-320901号公報や特開平10-111888号公報にもワークフローに対応したシステムが開示されている。

【0009】更に、特開平10-105623号公報にはワークフローの階層化について開示されており、特開平8-161393号公報には業務に対して特定の人を直接関連付けず、業務に対して抽象的な役割を関連付ける事項が開示されている。

【0010】しかしながら、上記のいずれの文献にも、業務プロセスを意識して各種のドキュメントを一元管理すること、及び、アプリケーションあるいはそれを利用するクライアントとデータベースとの間で柔軟にデータ交換を行うこと、については開示されていない。

【0011】本発明は、上記従来の課題に鑑みなされたものであり、その目的は、業務プロセスに関わる多様なドキュメントサービス（システム）を統合し、業務プロセスを支援するとともに、合理的なドキュメント処理を実現することにある。

【0012】本発明の他の目的は、既存の多種多様のアプリケーション及び既存の多種多様のデータベースを相互につなげて統合管理し、ドキュメントの利用の促進及びドキュメントの一元管理を実現することにある。

【0013】

【課題を解決するための手段】（1）上記目的を達成するために、本発明は、ドキュメントを利用する少なくとも1つのクライアントと、ドキュメントを管理する少なくとも1つの

データベースと、の間に設けられたシステムであって、前記データベースによって管理されている各種のドキュメントを業務プロセスに応じて統合管理する管理部と、前記クライアントからのドキュメント操作要求を処理する処理部と、を有するマネジメント部と、前記クライアントと前記マネジメント部との間のインターフェイスを確立する第1インターフェイス部と、前記データベースと前記マネジメント部との間のインターフェイスを確立する第2インターフェイス部と、を含むことを特徴とする。

【0014】上記構成によれば、ドキュメントサービス統合システムが、少なくとも1つのクライアントと、少なくとも1つのデータベース（データベースシステム）との間に設けられ、当該統合システムによって、それらのサービス（すなわち、クライアントで利用される各種のアプリケーション（アプリケーションプログラム）や各種のデータベース）がネットワーク上で統合される。また、データベースによって管理されている複数のドキュメントが業務プロセスに応じて統合管理される。

【0015】マネジメント部とクライアント（基本態様ではクライアントで利用されるアプリケーション）との間のインターフェイスは第1インターフェイス部によって確立され、この手段によって、第1インターフェイス部に適合するインターフェイスを有する限りにおいて、多種多様かつ任意数のクライアント（あるいはアプリケーション）をつなげることが可能となる。マネジメント部とデータベースとの間のインターフェイスは第2インターフェイス部によって確立され、この手段によって、第2インターフェイス部に適合する限りにおいて、多種多様かつ任意数のデータベースをつなげることが可能である。ここで、接続したいデータベースごとに、それとマネジメント部との間のインターフェイスを個別に確立するファシリティハンドラをプラグインできるようにするのが望ましい。この構成の場合、第2インターフェイス部は、本システムで統合したいデータベースの個数又はその種類の個数に相当する数のファシリティハンドラで構成されることになる。

【0016】上記構成によれば、複数のシステムを相互に連携させて新しい業務システムを構成できる。しかも、異種の複数のデータベースによって管理されている多種多様なドキュメントを業務プロセスを基本として統合管理することが可能となる。すなわち、分散して存在する複数のドキュメントを一元管理し、そのようなドキュメントを様々なクライアントから利用できる。よってクライアントからは、システム上の各種のドキュメントはあたかも単一のデータベースによって管理されているように見えるので、個々のクライアントに対して統一的なアクセス手段を提供可能である。特に、既存のシステム（サービス）をそのまま利用できるので、コスト面で有利であり、またシステムの柔軟性及び拡張性に優れている。例えば、会社内における情報の共有もより一層推進される。

【0017】なお、ドキュメントの概念には、各種の電子的なマルチメディアデータ（特に業務で利用するテキストデータ、図面データ、イメージデータなど）が含まれる。また、各種のアプリケーションは、ドキュメントサービス統合システムの一部あるいはそれに管理されるリソースとして構成することができ、その場合には、各アプリケーションを複数

のクライアントで共用することが可能となる。その場合に、ドキュメントサービス統合システム上のアプリケーションによってドキュメントの操作を実行し、その実行結果をクライアントに提供することもでき、又は、ドキュメントサービス統合システム上のアプリケーションの全部又は一部の機能をクライアントへ転送し、クライアント上の処理機能をもってドキュメントを処理させてもよい。あるいは、最初から個々のクライアントに必要なアプリケーションを搭載し、そのアプリケーションへドキュメントを渡して処理させてもよい。つまり、各種の条件に応じてシステム構成を適宜変更可能である。

【0018】(2) 望ましくは、上記構成において、前記管理部は、業務プロセスごとに複数のドキュメントの関連付け定義が格納された第1テーブルを有し、前記処理部は、前記関連付け定義に従って、前記ドキュメント操作要求を処理する。

【0019】上記構成によれば、業務プロセスごとに、その業務プロセスに関わる複数のドキュメント（例えば、起案書、当初の設計図面、変更後の設計図面、マニュアル、指示書、管理情報、など）が相互に関連付けられる。つまり、業務プロセスごとのドキュメントセットが構成される。

【0020】(3) 望ましくは、上記構成において、前記処理部は、前記関連付け定義に従って、ドキュメント検索を行う機能を有する。この構成によれば、関連付け定義に従って、あるドキュメントからそれに関連する他のドキュメントを検索することや、ある業務プロセスで利用される全ドキュメントを検索することなどが可能となる。もちろん、そのような検索に当たって、クライアント側は各ドキュメントの実際の所在や登録属性を格別意識する必要はない。

【0021】(4) 望ましくは、上記構成において、前記処理部は、前記関連付け定義に従って、相互に関連付けされた複数のドキュメントを一括印刷する機能を有する。この構成によれば、ある業務プロセスに関わる全部又はその一部を構成する複数のドキュメントを一括印刷することが可能となり、ユーザー負担が大幅に軽減される。

【0022】(5) 望ましくは、上記構成において、前記管理部は、業務プロセスにおけるステータス遷移定義が格納された第2テーブルを有し、前記処理部は、前記ステータス遷移定義に従って、前記ドキュメント操作要求を処理する。この構成によれば、従来のように、人（担当者）を基準にして業務プロセス上のステータス（状態）を管理するのに代えて、ドキュメントを基準にして業務プロセス上のステータスを管理することが可能となる。

【0023】(6) 望ましくは、上記構成において、前記管理部は、役割名とユーザー名との対応関係の定義が格納された第3テーブルを有し、前記ステータス遷移定義には前記役割名を記述可能であり、前記処理部は前記ステータス遷移定義及び前記対応関係に従って、前記ドキュメント操作要求を処理する。この構成によれば、抽象的な役割名によってステータス遷移の条件を記述可能である。よって、担当者が変更になっても、第3テーブルの内容のみ書き換えればよい。ここで、役割（ロール）名とは、例えば、作成者、承認者、管理者、入出力業務担当者、利用者などの抽象名称である。ユーザー名は、例えば、具体

的人名（あるいはその ID）かそれらを構成要素とするグループ名（あるいはその ID）である。

【0024】(7) 望ましくは、上記構成において、前記管理部は、複数のアプリケーション間におけるデータ形式変換の定義が格納された第4テーブルを有し、前記処理部は、前記データ形式変換の定義に従って、第1のアプリケーションで生成された第1データ形式のドキュメントを第2形式のドキュメントに変換し、当該第2データ形式のドキュメントを第2のアプリケーションへ渡す。この構成よれば、各アプリケーションにおいて、常に、それが処理可能なデータ形式でドキュメントを受け取ることが可能となる。そして、その結果をクライアントで利用できる。

【0025】(8) 望ましくは、上記構成において、前記管理部は、各ドキュメントの公開範囲の定義が格納された第5テーブルを有し、前記処理部は、前記公開範囲の定義に従って、ドキュメントに対するアクセス制限を行う。この構成によれば、業務プロセスの内容やドキュメントの性質に応じて自在に公開範囲を設定でき、ドキュメントのセキュリティを図ることができる。

【0026】(9) 望ましくは、上記構成において、前記マネジメント部は、業務プロセスにおける一連のドキュメント操作に関するログを記録するログ記録部を有する。この構成によれば、各操作に関してログが記録されているので、そのログを分析して、業務プロセスを改善することなどが可能となる。

【0027】(10) また、上記目的を達成するために、本発明は、ドキュメントを各種アプリケーション上で利用する複数のクライアントに接続可能であり、かつ、ドキュメントを管理する複数のデータベースに接続可能であるシステムであって、前記データベースによって管理されている各種のドキュメントを業務プロセスに応じて統合管理する管理部と、前記クライアントからのドキュメント操作要求を処理する処理部と、を有するマネジメント部と、前記アプリケーションと前記マネジメント部との間のインターフェイスを確立する第1インターフェイス部と、前記データベースと前記マネジメント部との間のインターフェイスを確立する第2インターフェイス部と、を含むことを特徴とする。

【0028】上記構成によれば、所望数のアプリケーション及び所望数のデータベースを接続可能であり、それらのサービスを統合し、複数のデータベースに存在する各種のドキュメントを一元管理することが可能となる。

【0029】(11) 望ましくは、前記第1インターフェイス部は、所定のアプリケーションインターフェイス規約に則った命令を解釈する機能を有する。

【0030】(12) 望ましくは、上記構成において、前記第2インターフェイス部は、個々のデータベースに対応して設けられた複数のファシリティハンドラによって構成される。

【0031】(13) 望ましくは、上記のマネジメント部は、ミドルウェアとしてのソフトウェアによって構成される。また、第1インターフェイス部及び第2インターフェイス部もソフトウェアによって構成される。それらのソフトウェアは、コンピュータシステム上

の記憶装置に格納され、CPUによって実行される。また、その記憶装置に対しては、それらのソフトウェアを可搬型のメディアや通信によってインストールするようにしてもよい。

【0032】

【発明の実施の形態】以下、本発明の好適な実施形態を図面に基づいて説明する。

【0033】図1には、本発明に係るドキュメントサービス統合システムの好適な実施形態が示されており、図1R>1はその全体構成を示す概略図である。

【0034】図1において、ドキュメントサービス統合システム10は、1または複数の業務プロセスで利用される複数のサービス（システム）をネットワーク上で統合し、しかも業務プロセスに関連する複数のドキュメントを統合管理するためのシステムである。図示されるように、ドキュメントサービス統合システム10には、複数のクライアントシステム12と、複数の業務データベース14と、が接続されている。

【0035】ここで、各クライアントシステム12は、WEBブラウザ36を有している。このWEBブラウザ36及び後述のWEBサーバー30の両者によって、ユーザーインターフェイスが構築されている。

【0036】後述のように、ある業務プロセス200の遂行にあたっては、異種または同種の複数の業務アプリケーション34A、34B、34Cが利用される。それらの業務アプリケーション34A、34B、34Cは、図1に示す実施形態において、ドキュメントサービス統合システム10の一部を構成しあるいは当該システム10によって統合管理される。

【0037】なお、各クライアント12に対して必要に応じて業務アプリケーションの全部又は一部の機能を転送し、各クライアント12の処理機能を利用してドキュメントの処理を行うこともできるし、最初から各クライアント12に必要なアプリケーションを搭載しておくこともできる。

【0038】また、ある業務プロセスの遂行にあたっては異種または同種の複数の業務データベース14によって管理されている複数のドキュメントが利用される。そのような複数のデータベース14は、上記のように、ドキュメントサービス統合システム10によって統合管理されている。

【0039】ドキュメントサービス統合システム10は、図1に示す例において、マネジメントシステム16と、第1インターフェイス部18（この例ではAPIサービス32）と、1又は複数のアプリケーション34A、34B、34Cと、WEBサーバー30と、第2インターフェイス部20と、プライマリーデータベース22と、アウトプットサービス（OPS）24と、によって構成されている。ちなみに、必要に応じてインプットサービス（図示せず）などを設けてもよい。

【0040】ここで、WEBサーバー30は、上記の通り、WEBブラウザ36とともにユーザーインターフェイスを構成する。具体的には、WEBサーバー30は、WEBブラウザ36からの指示に応じてドキュメントのブラウジング処理などのサービスを提供する。

それらの間の通信にあたっては、H T T P プロトコルが利用される。

【0041】複数の業務アプリケーション34A, 34B, 34Cは、業務プロセス上においてドキュメント処理を実行するためのプログラムであって、システム10上に各種のものを搭載可能である。クライアントシステム12からのドキュメント操作命令は、上述のように、W E B サーバー30を介して、各アプリケーション34A, 34B, 34Cへ渡される。業務アプリケーション34A, 34B, 34Cは、A P I (アプリケーションインターフェイス) サービス32が提供するA P I をコールすることによって、いずれかの業務データベース14上に存在するドキュメントを取得可能である。このA P I サービス32の介在により、業務アプリケーション34A, 34B, 34Cは(クライアントシステム12側でも同様)、ドキュメントの所在や属性を意識することなく、必要なドキュメントを必要な形式で取得可能である。また、A P I サービス32によってアプリケーション間の形式の相違も吸収される。

【0042】以上のように、業務アプリケーション34A, 34B, 34Cは、W E B ブラウザを介して受けた操作要求を処理・解釈し、A P I を呼び出すことによって所望のサービスを提供する。つまり、A P I サービス32は、業務アプリケーション34A, 34B, 34Cでのドキュメント処理を実現するために、ドキュメントに対する呼び出しや登録などの操作、ドキュメントの検索、ログ管理などのためのインターフェイスを提供する。なお、各クライアントマシン12でドキュメントに対する何らかの操作を行う場合には、あらかじめ定められたA P I 規約に則ったコマンドが指定され、当該コマンドがA P I サービス32によって解釈されることになる。具体的には、その解釈結果を受け付けたマネジメントシステム16からのサービスの提供を受ける。

【0043】もちろん、図1に示す第1インターフェイス部18の構成は単に一例であつて、これ以外にもマネジメントシステム16と業務アプリケーション34との間のインターフェイスを確立できる限りにおいて、他のインターフェイスモジュールを利用することもできる。

【0044】一方、第2インターフェイス部20は、マネジメントシステム16と各業務データベース14との間のインターフェイスを確立する手段である。本実施形態においては、業務データベース14毎に設けられたファシリティハンドラー28によってインターフェイス(サービスプログラムインターフェイス(S P I))が確立されている。ここで、ファシリティハンドラー28は、各業務データベース14に対応したものをプラグイン方式によって追加できるように構成されている。よって、異種の業務データベースが混在していても、ファシリティハンドラー28を追加することによって、それらの業務データベースをマネジメントシステム16によって一元管理することが可能となる。

【0045】ちなみに、プライマリーハンドラー26は、ドキュメントサービス統合システム10を構成するプライマリーデータベース22との間におけるインターフェイスを確立するための専用のファシリティハンドラーである。

【0046】したがって、上記の第2インターフェイス部20によれば、例えば会社内における既存の複数の業務データベースを統合し、一元管理することが可能となる。つまり、テキストデータや図面データあるいはイメージデータといった異種のデータもひとまとめに管理することが可能となる。

【0047】OPS24は、マネジメントシステム16からの要求により、ドキュメントデータを出力するサービスである。例えば、後述するドキュメントセットの印刷を実行する場合、このOPS24が機能する。

【0048】マネジメントシステム16は、本実施形態においてデータ（ドキュメント）モデル、プロセスモデル、ユーザモデル、エリアモデル、インターチェンジモデルなどの各種の抽象化モデルにしたがって、業務プロセス毎に複数のドキュメントを統合管理するシステムである。このマネジメントシステム16は多様な機能を有しており、それらの各機能の代表例が図2にブロック図として示されている。ちなみに、上述した各モデルに基づく各種の定義はプライマリーデータベース22上に格納されており、それらの定義の具体例については後に図3R>3を用いて説明する。

【0049】なお、従来においては、業務プロセスにおけるステータスが人を基準にして管理されていたが、本実施形態においては、業務プロセス上のステータスがドキュメントを基準として管理されている。これについても後に詳述する。

【0050】図2において、図1に示したマネジメントシステム16は大別して処理モジュール群202と管理モジュール群204とで構成されている。但し、以下に説明する各モジュールは、処理モジュール群202または管理モジュール群204のいずれかに完全に属するというものではなく、それぞれのモジュールは処理機能および管理機能の両面を有している。

【0051】まず、ドキュメント操作モジュール40について説明する。このドキュメント操作モジュール40が有する作成（登録）機能42は、業務プロセス単位で構成される1または複数のドキュメントからなるドキュメントセットを作成する機能である。また、参照機能44は、参照要求が出されたドキュメントの内容および属性を参照する機能である。また、削除機能45は、登録されているドキュメントセットを削除する機能である。また、更新機能46は、ドキュメントセットの属性を変更する機能であり、排他制御機能48は、ドキュメントセットの編集時においていわゆるチェックイン・チェックアウトによって他の編集を一時的にブロックしておく機能である。

【0052】検索モジュール50は、ドキュメントが持っている任意の属性を用いてドキュメントを検索する機能を有している。例えばある業務プロセスで利用する全部または一部の複数の関連ドキュメントを検索したり、ある業務プロセスに属するあるドキュメントから他のドキュメントを検索したりすることが可能である。ちなみに、ドキュメント内の情報検索すなわち全文検索はドキュメントを保管しているファシリティすなわちデータベースが当該機能を持っている場合に限り、実行することが可能である。

【0053】処理定義モジュール52は、ドキュメントに対する処理を定義してそれを管理・実行する機能を持ったモジュールである。まず、処理追加機能54は、ドキュメントに対する処理を追加する機能である。次に、処理削除機能56は、既に定義されている処理を削除する機能である。また、処理実行機能58は、登録されている処理を実行する機能である。

【0054】ステータス管理モジュール60は、ドキュメントセットの業務プロセス上における状態遷移の条件を定義し、それに基づいてドキュメントに対するアクセス権を制御する機能を有している。具体的には、ステータス定義機能62は、ドキュメントセットがとりうる状態とその状態間をどのように遷移させるかを定義する機能である。プロセス設定機能64は、ドキュメントセットがどのプロセスに基づいて状態遷移するのかを設定する機能である。ステータス変更機能65は、ドキュメントセットが持っている状態を変更する機能である。アクセス権制御機能66は、ドキュメントセットが持っている状態毎に実行できる処理を制御するための機能である。

【0055】関係管理モジュール68は、ドキュメントセットを構成する各ドキュメント間の関係を保持し、必要に応じてそれをたどることによって、関連するドキュメントにアクセスするためのモジュールである。それが有する関係設定機能70はドキュメントセットを枠組みとして、複数のドキュメント間に関係を設定する機能である。関係削除機能72は、ドキュメント間の関係を削除する機能である。関係ナビゲート機能74は、既に設定されている関係を参照して関係先のドキュメントにアクセスするための機能である。

【0056】バージョン管理・処理モジュール76はドキュメントセットの変更履歴を保持する。まず、バーション生成機能78は、新しいバージョンを生成する機能であり、最新バージョン取得機能80は指定されたドキュメントに関し、最新のバージョンを取り出すための機能である。また、指定バージョン取得機能82は、指定されたドキュメントに関する指定バージョンを取り出す機能である。

【0057】スコープ管理機能モジュール83は、ドキュメントの検索範囲や公開範囲を設定する。サービス間通信モジュール84は、当該システムを構成する各コンポーネント間における通信を図るための機能である。それにはデータ転送機能も含まれる。

【0058】サービス管理モジュール86は、サービスの開始・停止をつかさどる機能、発生したエラーを記憶する機能、各種の操作を記録する機能、データをバックアップする機能などを有している。

【0059】プラグインモジュール88は、図1に示したファシリティハンドラー28を追加する場合に機能するものである。図2に示した各モジュールは一例であって、それ以外にも各種のモジュール89を搭載可能である。

【0060】上記のマネジメントシステム16によれば、第1インターフェイス部18および第2インターフェイス部20による両側におけるインターフェイスの確立を前提とし、いずれかのデータベース14上に存在するドキュメントを自在に取り扱うことが可能であ

り、クライアントシステム12からの各種のドキュメント操作要求に対してそれに対応したサービスを提供することが可能である。特に、クライアントシステム12から、業務アプリケーションを介して、業務プロセス200に関連するドキュメントセットの取得要求があった場合、マネジメントシステム16によって当該ドキュメントセットを構成する複数のドキュメントが複数の業務データベース14から取得され、アプリケーションなどを介して、クライアントシステム12に提供される。したがって、クライアントシステム12側においては、目的とするドキュメントの実際の所在やその登録属性を意識することなく当該ドキュメントを参照可能であり、情報の共有化をより一層促進させることが可能となる。

【0061】マネジメントシステム16は、上述したようにデータ（ドキュメント）モデルやプロセスモデルなどに基づいて各種のデータを抽象的に管理しており、以下に、そのように管理されるデータについて図3を用いて説明する。

【0062】図3には、マネジメントシステム16によって管理されるデータ構成例が示されている。特に、プライマリーデータベース22上に格納されるデータの構造が示されている。図3に示すデータ構造は一例であって、もちろんこれ以外にも各種のデータ構造を採用可能である。

【0063】図3において、ドキュメント（セット）定義90は、ドキュメントモデルに基づいて各業務プロセス毎に作成されるものである。このドキュメント定義90によって、ある業務プロセスで利用される複数のドキュメントがドキュメントセットとして定義され、しかもそのドキュメントセットが業務プロセスとの関係において管理される。具体的に説明すると、ID100はドキュメントセットの識別子であり、ステータス102は当該ドキュメントセットの現在のステータス、すなわち業務プロセスの現状のステータスである。プロセス定義92は、後に説明する構成を有しております、このプロセス定義92が直接的にドキュメント定義90と関連づけられることによって、ドキュメントベースでのプロセス管理が実現されている。

【0064】URL104は、ドキュメントセットを構成する各ドキュメント毎にその所在を表したポインタである。例えば、URL104によってドキュメント実体108～110のアドレスが指定され、URL104によってプライマリーデータベース22内に存在するドキュメント実体106のアドレスが指定される。

【0065】ちなみに、ドキュメント定義90には、大別して、あらかじめシステム上で定められたシステム属性と、ユーザによって定義されるユーザ属性とが含まれ、後者の属性を利用して各種の情報を管理することができる。すなわち、図3に示すドキュメント定義90は一例である。

【0066】プロセス定義92は上述したようにドキュメント定義90と直接的に関連づけられているものであり、このプロセス定義92はプロセスモデルに基づいて作成される。ステータス112は、業務プロセスにおける各ステータスすなわちドキュメントのステー

タスを表しており、次のステータス 114 は、遷移条件 116 が満たされた場合に移行すべきステータスを表している。役割名 118 は、後述するユーザ定義 94 によって定義されるものである。

【0067】したがって、このプロセス定義 92 によれば、あるステータスにおいては、役割名 118 の条件を満たすユーザが遷移条件 116 を満たす操作を行わない限り、あるステータスから次のステータスへの移行は行われない。これによってプロセス管理が可能となり、同時にアクセス制限が実現されている。

【0068】ユーザ定義 94 は、役割名 118 とユーザ名 120 との対応関係を定義したものである。ここで役割名 118 は抽象的な担当者名であって、ユーザ名 120 は具体的なユーザ名あるいはユーザ ID であり、またはそれらの具体的なユーザ名のグループあるいはその ID である。このようなユーザ定義 94 はユーザモデルにしたがって作成される。

【0069】プロセスログ 99 は、業務プロセス毎に当該業務プロセス上において行われたドキュメントに対する各種の操作の記録に相当している。エリア定義 96 は、エリアモデルにしたがってドキュメントの公開範囲や検索範囲を定義するものである。例えば、図4において最上位のドキュメントスペース内に階層的に複数のエリアを設定することが可能であり、そのようなエリア定義を利用してアクセス制限などを行える。

【0070】インターチェンジ定義 98 は、アプリケーション間におけるデータ形式の変換を定義したものであり、インターチェンジモデルにしたがって作成される。このようなインターチェンジ定義 98 を利用して、各種のアプリケーションにおいて、それに適合するデータ形式でドキュメントを受け取ることが可能となる。ちなみに、ドキュメント定義 90 における URL 104 として他のドキュメントセットを指定すれば、いわゆるドキュメントセットの入れ子状態を形成することができる、ドキュメントセット相互間において階層的な管理を実現可能である。

【0071】上述したように、図3に示す構成例は実施形態を説明するための一例であつて、実際のシステムを構成する場合においてはオブジェクトを階層的に管理し、これによって各モデルにしたがった定義を構成することができる。

【0072】図2に示したドキュメント操作モジュール 40 は、図3に示したドキュメント定義 90などを利用してその処理を遂行するものである。また、検索モジュール 50 は、ドキュメント定義 90 やエリア定義 96などを利用してその処理を遂行する。ステータス管理モジュール 60 は、主としてプロセス定義 92 を取り扱うモジュールである。関係管理モジュール 68 は、ドキュメント定義 90 にかかわる処理を実行する。図2に示したそれ以外のモジュールも必要に応じて図3に示す各情報を参照・利用しその機能を発揮している。

【0073】次に、マネジメントシステム 16 の代表的な処理例を図5および図6を用いて説明する。

【0074】図5にはドキュメント取得時の処理の一例が示されている。まず、S101

では、クライアントシステム12から発行された特定ドキュメントの処理要求がWEBサーバー30によって受け付けられ、アプリケーションを介して、特定のドキュメントの取得要求がAPIサービス32によって処理される(S102)。次に、S103において、マネジメントシステム16により、取得対象となったドキュメント（あるいはドキュメントセット）に関するアクセス権およびステータス遷移条件がチェックされる。ここで、アクセス権がないものからのアクセスであったり、あるいはそのドキュメントのステータスが閲覧可能状態にない場合には、S104においてエラー処理が実行される。一方、S105においては、マネジメントシステム16によっていずれかの業務データベース14から対象ドキュメントが取得され、必要に応じてS106においてデータ変換が実行された後、S107で管理情報（例えばログ情報）などの記録が行われ、S108において当該対象ドキュメントが取得要求を発行したクライアントシステム12へ提供される。

【0075】以上のような処理において、クライアントシステム側においては、上記のように対象ドキュメントの所在やその登録属性を把握して取得要求を発行する必要はなく、極めて簡便に対象ドキュメントの取得を行うことが可能となる。また、そのような対象ドキュメントの取得にあたって、当該対象ドキュメントが属する業務プロセスから見て、アクセス権やステータスなどがチェックされるため、セキュリティを確保することも可能である。また、プロセス管理を確実に行えるという利点がある。

【0076】図6には、ドキュメントセット印刷時の処理の一例が示されている。まず、S201では、クライアントからのセット印刷要求がWEBサーバー30で受け付けられる。S202ではその要求がAPIサービス32によって処理され、S203ではマネジメントシステム16により、要求を発行したクライアントに関し、アクセス権があるかおよび印刷可能なステータスにあるかどうかがチェックされる。ここで、そのチェックの結果が否定的であればS204においてエラー処理が実行される。一方、そのチェックの結果が肯定的であれば、S205において対象ドキュメントセットがいずれかのデータベース上から取得され、それらの対象ドキュメントセットが一括して印刷される。

【0077】したがって、従来のように、ユーザが各ドキュメントをそれぞれ個別的に印刷して束ねるといった煩雑な作業を解消でき、業務作業を速やかにかつ簡便に遂行できるという利点がある。また、上記のようにアクセス権やステータスのチェックが行われているため、セキュリティを確実に確保できるとともに、業務プロセス上における印刷管理を徹底できるという利点がある。

【0078】図5および図6はマネジメントシステム16が有する一部の機能を図示したものであり、もちろん図2に示したようにマネジメントシステムは多様な機能を有している。いずれにしても図1に示した第1インターフェイス部18および第2インターフェイス部20の作用によって多種多様のドキュメントサービスが統合化されており、しかも業務プロセスの観点からドキュメント管理が行われているため、単なるドキュメント管理を越える、業務に密着した合理的なドキュメント管理を実現できる。よって、本実施形態に

かかるドキュメントサービス統合システム 10 によれば、従来にはない全く新しい業務システムを構築でき、その上で能率的な業務プロセスを構築できるという利点がある。なお、本実施形態にかかるドキュメントサービス統合システムは、製品開発から製品販売さらにはメンテナンスや製品修理などを含む総合的な業務支援システムとして利用可能である。一方において、小規模の業務についても適合でき、拡張性および柔軟性に富むという利点がある。

【0079】

【発明の効果】以上説明したように、本発明によれば、業務プロセスにかかる多様なドキュメントサービスを統合し、業務プロセスを支援するとともに、合理的なドキュメント処理を実現可能である。

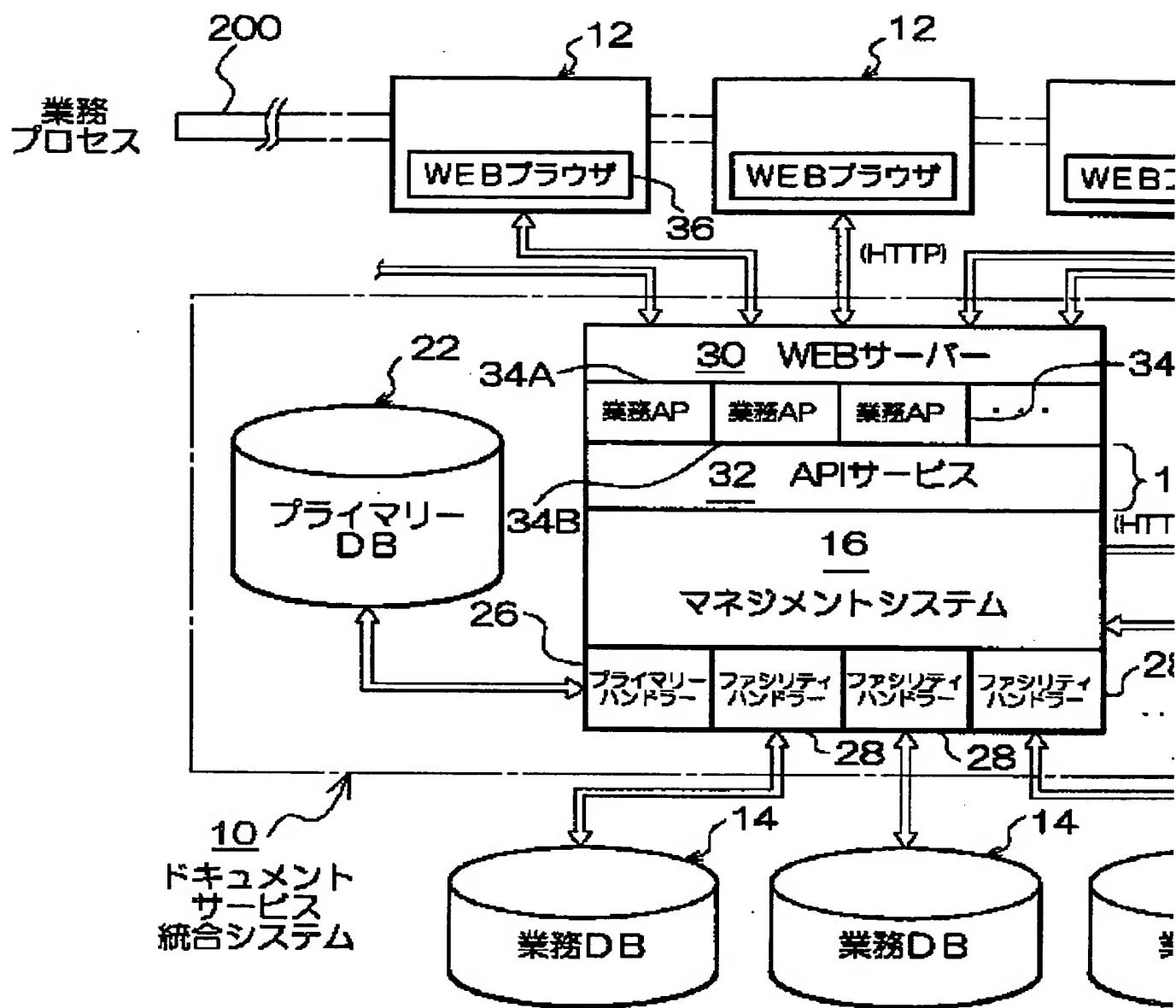
【図面の簡単な説明】

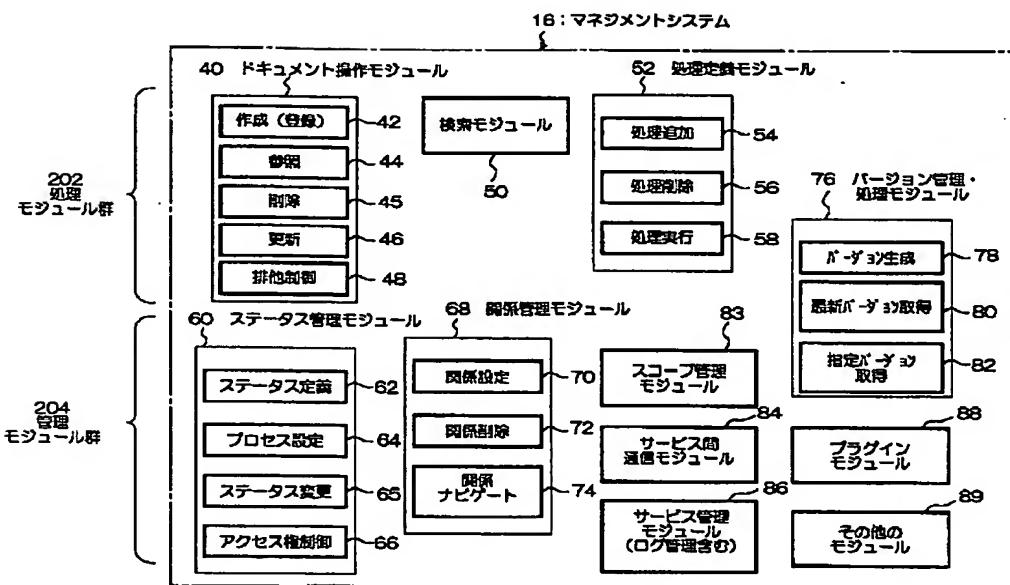
- 【図1】 本発明にかかるドキュメントサービス統合システムの概念を示す図である。
- 【図2】 図1に示すマネジメントシステムの具体的な構成例を示すブロック図である。
- 【図3】 図1に示すプライマリーデータベース上におけるデータの構造を示す図である。
- 【図4】 エリア定義の一例を示す図である。
- 【図5】 ドキュメント取得時の処理を示すフローチャートである。
- 【図6】 ドキュメントセット印刷時の処理を示すフローチャートである。

【符号の説明】

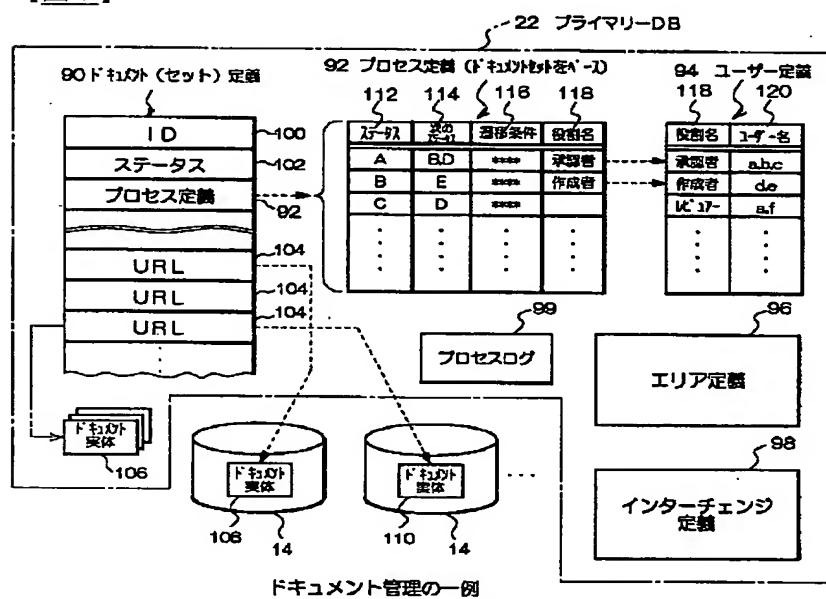
10 ドキュメントサービス統合システム、12 クライアントシステム、14 業務データベース、16 マネジメントシステム、18 第1インターフェイス部、20 第2インターフェイス部、22 プライマリーデータベース、24 アウトプットサービス (O P S)、26 プライマリーハンドラー、28 ファシリティハンドラー。

【図1】

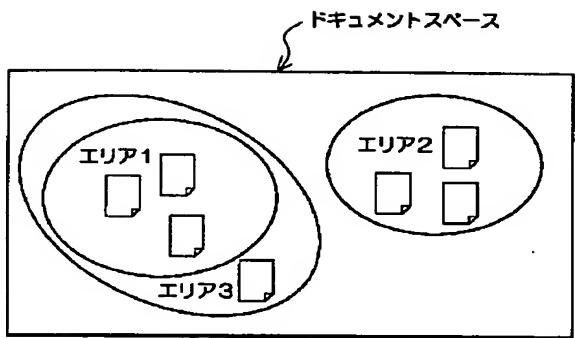




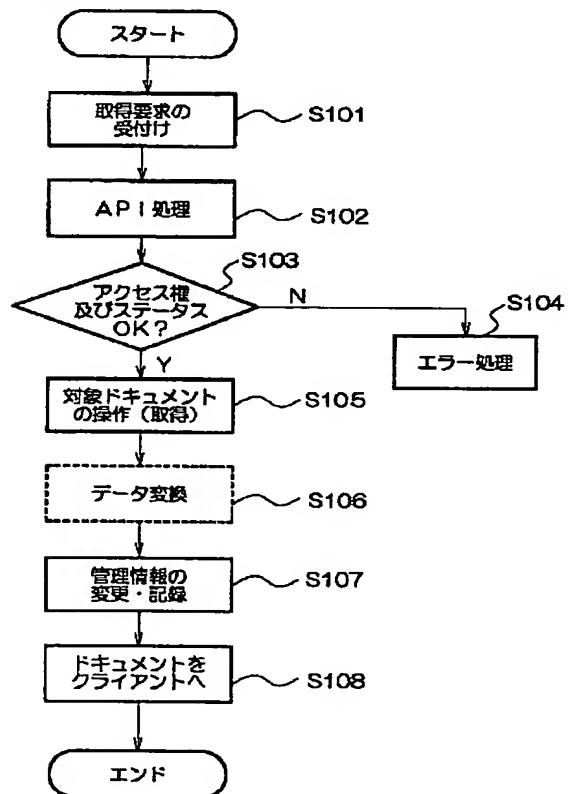
【図3】



【図4】

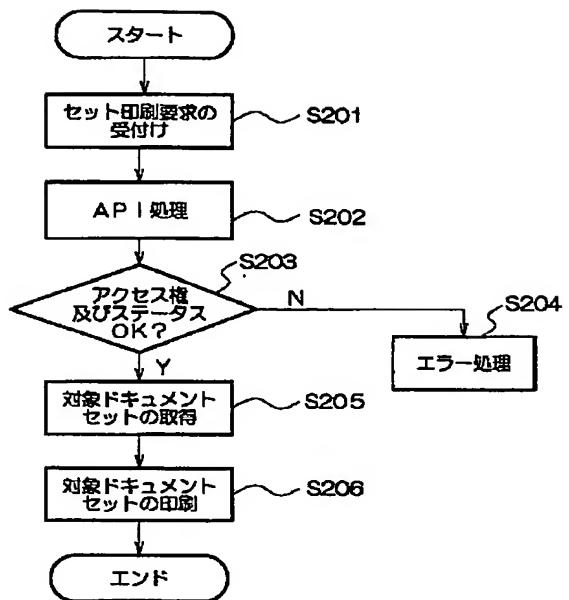


【図 5】



ドキュメント取得時の処理の一例

【図 6】



ドキュメントセット印刷時の処理の一例

CLAIMS

[Claim(s)]

[Claim 1] At least one client using a document, and at least one database which manages a document, With the Management Department which does integrated management of various kinds of documents which are the systems formed between ** and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which ****, and said client and said management section, The document service integration system characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[Claim 2] It is the document service integration system which said Management Department has the 1st table on which the correlation definition of two or more documents was stored for every operating process in a system according to claim 1, and is characterized by said processing section processing said document actuation demand according to said correlation definition.

[Claim 3] It is the document service integration system characterized by having the function in which said processing section performs document retrieval in a system according to claim 2 according to said correlation definition.

[Claim 4] It is the document service integration system characterized by having the function which carries out batch print of two or more documents by which said processing section was mutually associated in the system according to claim 2 according to said correlation definition.

[Claim 5] It is the document service integration system which said Management Department has the 2nd table on which the status transition definition in an operating process was stored in a system according to claim 1, and is characterized by said processing section processing said document actuation demand according to said status transition definition.

[Claim 6] It is the document service integration system which said Management Department has the 3rd table on which the definition of the correspondence relation between a role name and a user name was stored in a system according to claim 5 , can describe said role name for said status transition definition , and is characterize by said processing section process said document actuation demand according to said status

transition definition and said correspondence relation .

[Claim 7] It is the document service integration system characterized by setting to a system according to claim 1, for said Management Department having the 4th table on which the definition of the data-format conversion between two or more applications was stored, and for said processing section changing into the document of the 2nd format the document of the 1st data format generated with the 1st application according to the definition of said data-format conversion, and passing the document of the 2nd data format concerned to the 2nd application.

[Claim 8] Said Management Department is a document service integration system which has the 5th table on which the definition of the open range of each document was stored in the system according to claim 1, and is characterized by said processing section performing access restriction to a document according to the definition of said open range.

[Claim 9] It is the document service integration system characterized by having the log Records Department which records the log about a series of document actuation [in / on a system according to claim 1 and / in said management section / an operating process].

[Claim 10] A document is connectable with two or more clients used on [various] application. With and the Management Department which does integrated management of various kinds of documents which are systems connectable with two or more databases which manage a document, and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which ****, and said application and said management section, The document service integration system characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[Claim 11] It is the document service integration system characterized by having the function to interpret the instruction with which said 1st interface section followed predetermined application interface agreement in the system according to claim 10.

[Claim 12] It is the document service integration system characterized by being constituted by two or more facility handlers by which said 2nd interface section was prepared in the system according to claim 10 corresponding to each database.

[Claim 13] At least one client using a document, and at least one database which manages a document, It is the medium which stored the program which is used with the document service integration system formed between **, and in which computer read is possible. The program storage with which said program is characterized by having the

function manager which manages various kinds of documents managed by said database according to an operating process, and the processing facility which processes the document actuation demand from said client.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the system for using the various operating documents especially managed by two or more databases by two or more clients about a document service integration system according to an operating process.

[0002]

[Description of the Prior Art] For example, a series of business in the case of performing manufacture and sale of a product consists of two or more processes. If an example is given, the business of a series of consists of each process, such as a proposal plan, a design, acknowledgement, production, PD, sale, and a support. A system which a separate section takes charge of each process, and is generally different for each section is installed in many cases. For example, the system which deals with engineering drawing etc. is installed in a design section, and the system which manages operating information including sales information etc. is installed in the sales division.

[0003] Although each system in a firm is being physically unified by the spread of intranets in recent years, the various systems on a series of operating processes are unified, and, moreover, as for the system which can be supported synthetically, the whole operating process is not yet offered.

[0004] By the way, the so-called workflow system is known as a method which manages an operating process. By this method, sequential migration of the predetermined document (operating document used as a nucleus) is carried out between each process, and, thereby, progress of business is managed. For example, if it is the business of a design change, the predetermined request sheet as a document will be created first, and each process, such as a design and acknowledgement, will advance gradually by the delivery. In addition, although such a document is usually sent among persons in charge as paper, the method which uses an electronic mail etc. and is sent in the format of an electronic document is also adopted in recent years. Anyway, the document concerned

serves as a nucleus of operating advance, and the whereabouts or the status of the document is reflecting progress of the business concerned.

[0005] Various kinds of data, such as a related document, statistical materials, and a drawing, are attached to the above-mentioned operating document in many cases. However, as mentioned above, in the former, service of plurality [processes / a series of / operating], and since it was specifically built on application (application program) or a database (database system), it was difficult [it] to share or exchange information between individual systems. For this reason, in fact, the information relevant to the business concerned was printed on paper, and attaching it was performed if needed. [0006] Of course, if the special software which connects them between each system is built, it is possible to secure the relation between individual systems. However, it is difficult for such customize to generate many costs burdens, and to deal with specification modification of an individual system etc. flexibly.

[0007] The workflow managerial system is indicated by JP,10-326314,A. In this system, the document which is a processing object is electronically circulated among each person in charge persons according to flow control information including the process definition which described the contents of processing, a procedure, persons in charge, and those decision rules, the circulation situation of a document, a processing situation, etc. Here, a process definition is referred to when making the status of a document change.

[0008] Moreover, describing the circulation path of the document in an electronic document is indicated by JP,9-282250,A. The system corresponding to a workflow is indicated by JP,8-320901,A and JP,10-111888,A.

[0009] Furthermore, it is indicated by JP,10-105623,A about hierarchization of a workflow, and the matter which does not relate a specific man with JP,8-161393,A directly to business, but associates an abstract role to business is indicated.

[0010] However, between the clients and databases which use carrying out unitary management of various kinds of documents being conscious of an operating process and application, or it for any above-mentioned reference, lessons is taken from performing the data exchange flexibly, and it is not indicated.

[0011] This invention is made in view of the above-mentioned conventional technical problem, and the purpose is to realize rational document handling while it unifies the various document services (system) in connection with an operating process and supports an operating process.

[0012] Other purposes of this invention connect the existing various applications and a variety of existing databases mutually, carry out integrated management, and are to

realize promotion of use of a document, and unitary management of a document.

[0013]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, (1) This invention At least one client using a document, and at least one database which manages a document, With the Management Department which does integrated management of various kinds of documents which are the systems formed between ** and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which ****, and said client and said management section, It is characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[0014] According to the above-mentioned configuration, a document service integration system is formed between at least one client and at least one database (database system), and those services (namely, various kinds of application (application program) and various kinds of databases which are used by the client) are unified on a network by the integration system concerned. Moreover, according to an operating process, integrated management of two or more documents managed by the database is carried out.

[0015] The 1st interface section is established, and the interface between the management section and a client (application used by the client in a basic mode) becomes variously possible [connecting the client (or application) of the number of arbitration], as long as it has the interface which suits the 1st interface section with this means. The interface between the management section and a database can connect [various and] the database of the number of arbitration, as long as the 2nd interface section is established and the 2nd interface section is suited with this means. It is desirable that it can be made to carry out here plug-in of the facility handler which establishes the interface between it and the management section individually for every database to connect. In this configuration, the 2nd interface section will consist of a number equivalent to the number of a database to unify by this system, or that kind of number of facility handlers.

[0016] According to the above-mentioned configuration, two or more systems are made to cooperate mutually, and a new operating system can be constituted. And it becomes possible to carry out integrated management of the various documents managed by two or more databases of a different kind on the basis of an operating process. That is, unitary management of two or more documents which exist dispersedly is carried out,

and such a document can be used from various KURAIANTON. Therefore, from a client, since various kinds of documents on a system seem to be managed by the single database, a unific access means can be offered to each client. Since the existing system (service) can be used especially as it is, it is advantageous in respect of cost, and excels in the flexibility and expandability of a system. For example, it is promoted one layer of share nearby of the information in a firm.

[0017] In addition, various kinds of electronic multimedia data (the text data used especially on business, drawing data, image data, etc.) are contained in the concept of a document. Moreover, various kinds of applications can be constituted as a resource managed by some document service integration systems or it, and become possible [sharing each application by two or more clients] in that case. In that case, actuation of a document may be performed with the application on a document service integration system, and a client can also be provided with the activation result, or the function of all or a part of applications on a document service integration system may be transmitted to a client, and a document may be made to process with the processing facility on a client. Or application required for each client may be carried from the beginning, and a document may be made to pass and process to the application. That is, according to various kinds of conditions, a system configuration can be changed suitably.

[0018] (2) In the above-mentioned configuration, said Management Department has desirably the 1st table on which the correlation definition of two or more documents was stored for every operating process, and said processing section processes said document actuation demand according to said correlation definition.

[0019] Two or more documents (for example, a draft document, the original design drawing, the design drawing after modification, a manual, instructions, management information, etc.) which are concerned with the operating process for every operating process according to the above-mentioned configuration relate mutually, and it is *****. That is, the document set for every operating process is constituted.

[0020] (3) In the above-mentioned configuration, said processing section has desirably the function to perform document retrieval, according to said correlation definition. According to this configuration, according to a correlation definition, it becomes possible from a certain document to search other documents relevant to it, to search all the documents used in a certain operating process, etc. Of course, a client side does not need to be exceptionally conscious of the actual whereabouts or the registration attribute of each document in such retrieval.

[0021] (4) In the above-mentioned configuration, said processing section has desirably the function which carries out batch print of two or more documents associated

mutually according to said correlation definition. According to this configuration, it becomes possible to carry out batch print of two or more documents which constitute all in connection with a certain operating process, or its part, and a user burden is mitigated sharply.

[0022] (5) In the above-mentioned configuration, said Management Department has desirably the 2nd table on which the status transition definition in an operating process was stored, and said processing section processes said document actuation demand according to said status transition definition. According to this configuration, it replaces with managing the status on an operating process (condition) on the basis of people (person in charge) like before, and it becomes possible to manage the status on an operating process on the basis of a document.

[0023] (6) In the above-mentioned configuration, said Management Department has desirably the 3rd table on which the definition of the correspondence relation between a role name and a user name was stored, said role name can be described for said status transition definition, and said processing section processes said document actuation demand according to said status transition definition and said correspondence relation. According to this configuration, an abstract role name can describe the conditions of status transition. Therefore, what is necessary is to rewrite only the contents of the 3rd table, even if a person in charge is changed. Here, role (roll) names are abstract names, such as an implementer, an acknowledgement person, a manager, an I/O operating person in charge, and a user. A user name is a concrete name of a person (or the ID) or a group name (or the ID) which makes them a component.

[0024] (7) Desirably, set in the above-mentioned configuration and said Management Department has the 4th table on which the definition of the data-format conversion between two or more applications was stored, and said processing section changes into the document of the 2nd format the document of the 1st data format generated with the 1st application according to the definition of said data-format conversion, and passes the document of the 2nd data format concerned to the 2nd application. In this configuration ***** and each application, it becomes possible to always receive a document in the data format which can process it. And the result can be used by the client.

[0025] (8) Desirably, in the above-mentioned configuration, said Management Department has the 5th table on which the definition of the open range of each document was stored, and said processing section performs access restriction to a document according to the definition of said open range. According to this configuration, according to the contents of the operating process, or the property of a document, the

open range can be set up free, and security of a document can be planned.

[0026] (9) In the above-mentioned configuration, said management section has desirably the log Records Department which records the log about a series of document actuation in an operating process. According to this configuration, since the log is recorded about each actuation, that log is analyzed and it becomes possible to improve an operating process etc.

[0027] In order to attain the above-mentioned purpose, (10) Moreover, this invention A document is connectable with two or more clients used on [various] application. With and the Management Department which does integrated management of various kinds of documents which are systems connectable with two or more databases which manage a document, and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which *****, and said application and said management section, It is characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[0028] According to the above-mentioned configuration, the application of the number of requests and the database of the number of requests can be connected, those services are unified, and it becomes possible to carry out unitary management of various kinds of documents which exist in two or more databases.

[0029] (11) Said 1st interface section has desirably the function to interpret the instruction in accordance with predetermined application interface agreement.

[0030] (12) In the above-mentioned configuration, said 2nd interface section is desirably constituted by two or more facility handlers formed corresponding to each database.

[0031] (13) The above-mentioned management section is desirably constituted by the software as middleware. Moreover, the 1st interface section and the 2nd interface section are also constituted by software. Those software is stored in the storage on a computer system, and is performed by CPU. Moreover, you may make it install those software by the media of a portable mold, or communication link to the store.

[0032]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained based on a drawing.

[0033] The suitable operation gestalt of the document service integration system concerning this invention is shown in drawing 1, and drawing 1 R> 1 is the schematic diagram showing the whole configuration.

[0034] In drawing 1, the document service integration system 10 is a system for

carrying out integrated management of two or more documents which unify on a network two or more services (system) used in 1 or two or more operating processes, and moreover relate to an operating process. Two or more client systems 12, two or more operating databases 14, and ** are connected to the document service integration system 10 so that it may be illustrated.

[0035] Here, each client system 12 has the WEB browser 36. The user interface is built by both this WEB browser 36 and below-mentioned WEB server 30.

[0036] Like the after-mentioned, two or more operating applications 34A, 34B, and 34C of a different kind or of the same kind are used in execution of a certain operating process 200. In the operation gestalt shown in drawing 1, those operating applications 34A, 34B, and 34C constitute some document service integration systems 10, or integrated management is carried out by the system 10 concerned.

[0037] In addition, the function of all or a part of operating applications can be transmitted if needed to each client 12, a document can also be processed using the processing facility of each client 12, and application required for each client 12 can also be carried from the beginning.

[0038] Moreover, two or more documents managed in execution of a certain operating process by two or more operating databases 14 of a different kind or of the same kind are used. As mentioned above, integrated management of such two or more databases 14 is carried out by the document service integration system 10.

[0039] The document service integration system 10 is constituted in the example shown in drawing 1 as resemble a management system 16, the 1st interface sections 18 (this example ** API service 32) and 1 or two or more applications 34A, 34B, and 34C, the WEB server 30, the 2nd interface section 20, the primary database 22, and the output service (OPS) 24. Incidentally, input service (not shown) etc. may be prepared if needed.

[0040] Here, the WEB server 30 constitutes a user interface with the WEB browser 36 as above-mentioned. Specifically, the WEB server 30 offers service of browsing processing of a document etc. according to the directions from the WEB browser 36. A HTTP protocol is used in the communication link between them.

[0041] On an operating process, two or more operating applications 34A, 34B, and 34C are the programs for performing document handling, and can carry various kinds of things on a system 10. The document operating instructions from the client system 12 are passed to each applications 34A, 34B, and 34C through the WEB server 30 as mentioned above. The operating applications 34A, 34B, and 34C can acquire the document which exists on one of the operating databases 14 by calling API which the API (application interface) service 32 offers. mediation of this API service 32 -- the

operating applications 34A, 34B, and 34C -- (.. the client system 12 side .. the same ..) -- a required document can be acquired in a required format, without being conscious of the whereabouts and the attribute of a document. Moreover, a difference of the format between applications is also absorbed by the API service 32.

[0042] As mentioned above, the operating applications 34A, 34B, and 34C process and interpret the actuation demand received through the WEB browser, and offer desired service by calling API. That is, the API service 32 offers the interface for actuation of the call to a document, registration, etc., retrieval of a document, log management, etc., in order to realize document handling in the operating applications 34A, 34B, and 34C. In addition, when each client machine 12 performs a certain actuation to a document, the command in accordance with the API agreement defined beforehand will be specified, and the command concerned will be interpreted by the API service 32. Specifically, offer of the service from the management system 16 which received the interpretation result is received.

[0043] Of course, the configuration of the 1st interface section 18 shown in drawing 1 is only an example, and as long as the interface between a management system 16 and the operating application 34 is establishable besides this, it can also use other interface modules.

[0044] On the other hand, the 2nd interface section 20 is a means to establish the interface between a management system 16 and each operating database 14. In this operation gestalt, the interface (service program interface (SPI)) is established by the facility handler 28 formed every operating database 14. Here, the facility handler 28 is constituted so that the thing corresponding to each operating database 14 can be added by the plug-in system. Therefore, even if the operating database of a different kind is intermingled, it becomes possible by adding the facility handler 28 to carry out unitary management of those operating databases with a management system 16.

[0045] Incidentally, the primary handler 26 is a facility handler of the dedication for establishing the interface between the primary databases 22 which constitute the document service integration system 10.

[0046] Therefore, according to the above-mentioned 2nd interface section 20, two or more existing operating databases in a firm are unified, for example, and it becomes possible to carry out unitary management. That is, data of a different kind, such as text data, drawing data, or an image data, also become possible [managing all together].

[0047] OPS24 is service which outputs document data by the demand from a management system 16. For example, when performing printing of the document set mentioned later, this OPS24 functions.

[0048] A management system 16 is a system which carries out integrated management of two or more documents for every operating process according to various kinds of abstraction models, such as a data (document) model, a process model, a user model, an area model, and an interchange model, in this operation gestalt. This management system 16 has various functions, and the example of representation of each of those functions is shown in drawing 2 as a block diagram. Incidentally, various kinds of definitions based on each model mentioned above are stored on the primary database 22, and use and explain drawing 3 R> 3 later about the example of those definitions.

[0049] In addition, in the former, although the status in an operating process was managed on the basis of people, in this operation gestalt, the status on an operating process is managed on the basis of the document. This is also explained in full detail behind.

[0050] In drawing 2 , the management system 16 shown in drawing 1 is divided roughly, and consists of a processing module group 202 and an administrative module group 204. However, completely [each module explained below / either the processing module group 202 or the administrative module group 204], it does not say and each module has [the group then] both sides of a processing facility and a function manager.

[0051] First, the document actuation module 40 is explained. The creation (registration) function 42 which this document actuation module 40 has is a function which creates the document set which consists of 1 or two or more documents which are constituted per operating process. Moreover, the reference function 44 is a function to refer to the contents and the attribute of a document by which the reference demand was advanced. Moreover, the Delete function 45 is a function to delete the document set registered. Moreover, the updating function 46 is a function to change the attribute of a document set, and the exclusive control function 48 is a function which blocks other edits with the so-called check-in check-out temporarily at the time of edit of a document set.

[0052] The retrieval module 50 has the function to search a document using the attribute of arbitration which the document has. For example, it is possible to search all that are used in a certain operating process or some two or more related documents, or to search other documents from a certain document belonging to a certain operating process. Incidentally, it is possible to restrict, when it has the function concerned, the facility, i.e., the database, which is keeping the document, the information retrieval, i.e., the full-text search, in a document, and to perform.

[0053] The processing definition module 52 is a module with the function to define the processing to a document, and to manage and perform it. First, the processing additional function 54 is a function to add the processing to a document. Next, the

processing Delete function 56 is a function to delete the processing already defined. Moreover, the processing execution function 58 is a function to perform processing registered.

[0054] The status administrative module 60 defines the conditions of the state transition on the operating process of a document set, and has the function which controls the access privilege to a document based on it. Specifically, the status definition function 62 is a function to define how between the condition that a document set can take, and its condition is made to change. It is the function to set up based on which process a document set carries out the state transition of the process setting up function 64. The status modification function 65 is a function to change the condition that the document set has. The access privilege control function 66 is a function for controlling the processing which the document set has and which can be performed for every condition.

[0055] The relationship management module 68 is a module for accessing a related document by holding the relation between each document which constitutes a document set, and following it if needed. The related setting up function 70 which it has is a function to set up relation among two or more documents by making a document set into a framework. The related Delete function 72 is a function to delete the relation between documents. The related navigation function 74 is a function for accessing the document of connection with reference to the already set-up relation.

[0056] Version control and the processing module 76 hold the modification hysteresis of a document set. First, the bar SHON generation function 78 is a function which generates a high version, and the latest version acquisition function 80 is a function for taking out the newest version about the specified document. Moreover, the assignment version acquisition function 82 is a function which takes out the assignment version about the specified document.

[0057] The scope function manager module 83 sets up the retrieval range and the open range of a document. The service compartment communication module 84 is a function for aiming at the communication link between each component which constitutes the system concerned. A data transfer function is also included in it.

[0058] The service administrative module 86 has the function to memorize the error which manages initiation and a halt of service and which was functioned and generated, the function which records various kinds of actuation, the function to back up data, etc.

[0059] A plug-in module 88 functions, when adding the facility handler 28 shown in drawing_1. Each module shown in drawing_2 is an example, and can carry various kinds of modules 89 besides it.

[0060] According to the above-mentioned management system 16, it is possible to deal with the document which exists on one of the databases 14 on the assumption that establishment of the interface in the both sides by the 1st interface section 18 and the 2nd interface section 20 free, and it is possible to offer the service corresponding to it to various kinds of document actuation demands from the client system 12. Especially, from the client system 12, when there is an acquisition demand of the document set relevant to the operating process 200 through operating application, by the management system 16, two or more documents which constitute the document set concerned are acquired from two or more operating databases 14, and the client system 12 is provided with them through application etc. Therefore, the document concerned can be referred to without being conscious of the actual whereabouts and its registration attribute of the document made into the purpose at the client system 12 side, and it becomes possible to promote informational share·ization further.

[0061] The management system 16 has managed various kinds of data abstractly based on a data (document) model, a process model, etc., as mentioned above, and it explains them below using drawing 3 about the data managed such.

[0062] The example of a data configuration managed by the management system 16 is shown in drawing 3 . The structure of the data especially stored on the primary database 22 is shown. The DS shown in drawing 3 is an example, and, of course, can adopt various kinds of DS besides this.

[0063] In drawing 3 , the document (set) definition 90 is created for every operating process based on a document model. Two or more documents used in a certain operating process are defined as a document set by this document definition 90, and, moreover, that document set is managed in relation with an operating process. When it explains concretely, ID100 is the identifier of a document set and the status 102 is the current status of the document set concerned, i.e., the status of the present condition of an operating process. The process definition 92 has the configuration explained later, and process control in the document base is realized by relating this process definition 92 with the document definition 90 directly.

[0064] URL104 is a pointer which constitutes a document set and which expressed the whereabouts for every document. For example, the address of the document stereos 108-110 is specified by URL104, and the address of the document stereo 106 which exists in the primary database 22 by URL104 is specified.

[0065] It is possible to divide roughly into the document definition 90, and for the system attribute beforehand defined on the system and the user attribute defined by the user to be contained in it incidentally, and to manage various kinds of information using

the latter attribute. That is, the document definition 90 shown in drawing 3 is an example.

[0066] The process definition 92 is directly related with the document definition 90, as mentioned above, and this process definition 92 is created based on a process model. The status 112 expresses each status in an operating process, i.e., the status of a document, and the following status 114 expresses the status which should shift when the transition conditions 116 are fulfilled. The role name 118 is defined by the custom 94 mentioned later.

[0067] Therefore, unless actuation in which the user who fulfills the conditions of the role name 118 fulfills the transition conditions 116 in a certain status is performed according to this process definition 92, the shift to the following status from a certain status is not performed. Process control becomes possible and access restriction is realized by this at coincidence.

[0068] Custom 94 defines the correspondence relation between the role name 118 and a user name 120. It is an abstract person-in-charge name, and a user name 120 is a concrete user name or user ID, or the role name 118 is the group of those concrete user names, or its ID here. Such custom 94 is created according to a user model.

[0069] The process log 99 is equivalent to record of various kinds of actuation to the document performed on the operating process concerned for every operating process. The area definition 96 defines the open range and retrieval range of a document according to an area model. For example, it is possible to set up two or more area hierarchical in the top document tooth space in drawing 4, and access restriction etc. can be performed using such an area definition.

[0070] The interchange definition 98 defines conversion of the data format between applications, and is created according to an interchange model. It becomes possible to receive a document in various kinds of applications in the data format which suits it using such interchange definition 98. Incidentally, hierarchical management is [in / it is possible to form the so-called nest condition of a document set, and / between document sets] realizable if other document sets are specified as URL104 in the document definition 90.

[0071] As mentioned above, the example of a configuration shown in drawing 3 is an example for explaining an operation gestalt, when it constitutes an actual system, can manage an object hierarchical, and can constitute the definition which followed each model by this.

[0072] The document actuation module 40 shown in drawing 2 carries out the processing using the document definition 90 shown in drawing 3. Moreover, the

retrieval module 50 carries out the processing using the document definition 90, the area definition 96, etc. The status administrative module 60 is a module which mainly deals with the process definition 92. The relationship management module 68 performs processing in connection with the document definition 90. Each information which also shows the other module shown in drawing 2 to drawing 3 if needed is referred to and used, and the function is demonstrated.

[0073] Next, the typical example of processing of a management system 16 is explained using drawing 5 and drawing 6.

[0074] An example of the processing at the time of document acquisition is shown in drawing 5. First, in S101, the processing demand of the specific document published from the client system 12 is received by the WEB server 30, and the acquisition demand of a specific document is processed by the API service 32 through application (S102). Next, in S103, the access privilege and status transition conditions about the document (or document set) which became a candidate for acquisition with the management system 16 are checked. Here, when it is access from a thing without an access privilege or the status of the document will be in the condition which can be perused, error processing is performed in S104. On the other hand, after an object document is acquired from one of the operating databases 14 and data conversion is performed in S106 in S105 if needed by the management system 16, record of management information (for example, log information) etc. is performed by S107, and it is provided in the client system 12 by which the object document concerned published the acquisition demand in S108.

[0075] It is not necessary to grasp the whereabouts and its registration attribute of an object document as mentioned above to a client system side, and to publish an acquisition demand, and it becomes possible in the above processings to acquire an object document very simple. Moreover, since it sees in acquisition of such an object document from the operating process to which the object document concerned belongs and an access privilege, the status, etc. are checked, it is also possible to secure security. Moreover, there is an advantage that process control can be performed certainly.

[0076] An example of the processing at the time of document set printing is shown in drawing 6. First, in S201, the set printing demand from a client is received with the WEB server 30. In S202, it is confirmed about the client which the demand was processed by the API service 32, and published the demand with the management system 16 in S203 whether there be an access privilege or be in the status which can be printed. Here, if the result of the check is negative, error processing will be performed in S204. On the other hand, if the result of the check is affirmative, S205 sets, an object

document set is acquired from one of databases, and they will be collectively printed by those object document sets.

[0077] Therefore, the complicated activity that a user prints each document individually, respectively and bundles it can be canceled like before, and there is an advantage that an operating activity is executable promptly and simple. Moreover, since the check of an access privilege or the status is performed as mentioned above, while security is certainly securable, there is an advantage that the printing management on an operating process can be put into practice.

[0078] Drawing 5 and drawing 6 illustrate a part of functions which a management system 16 has, and as shown in drawing 2, of course, the management system has various functions. Anyway, various document services are integrated by the operation of the 1st interface section 18 shown in drawing 1, and the 2nd interface section 20, and since document management is moreover performed from a viewpoint of an operating process, the rational document management exceeding mere document management stuck to business is realizable. Therefore, according to the document service integration system 10 concerning this operation gestalt, there is an advantage that the completely new operating system which is not in the former can be built, and an efficient operating process can be built on it. In addition, the document service integration system concerning this operation gestalt is available as a synthetic operating support system which includes a maintenance, product repair, etc. in a product selling pan from a product development. In one side, it can suit also about small-scale business and there is an advantage of being rich in expandability and flexibility.

[0079]

[Effect of the Invention] As explained above, while according to this invention unifying the various document services in connection with an operating process and supporting an operating process, rational document handling is realizable.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the system for using the various operating documents especially managed by two or more databases by two or more clients about a document service integration system according to an operating process.

EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, while according to this invention unifying the various document services in connection with an operating process and supporting an operating process, rational document handling is realizable.

TECHNICAL PROBLEM

[Description of the Prior Art] For example, a series of business in the case of performing manufacture and sale of a product consists of two or more processes. If an example is given, the business of a series of consists of each process, such as a proposal plan, a design, acknowledgement, production, PD, sale, and a support. A system which a separate section takes charge of each process, and is generally different for each section is installed in many cases. For example, the system which deals with engineering drawing etc. is installed in a design section, and the system which manages operating information including sales information etc. is installed in the sales division.

[0003] Although each system in a firm is being physically unified by the spread of intranets in recent years, the various systems on a series of operating processes are unified, and, moreover, as for the system which can be supported synthetically, the whole operating process is not yet offered.

[0004] By the way, the so-called workflow system is known as a method which manages an operating process. By this method, sequential migration of the predetermined document (operating document used as a nucleus) is carried out between each process, and, thereby, progress of business is managed. For example, if it is the business of a design change, the predetermined request sheet as a document will be created first, and each process, such as a design and acknowledgement, will advance gradually by the delivery. In addition, although such a document is usually sent among persons in charge as paper, the method which uses an electronic mail etc. and is sent in the format of an electronic document is also adopted in recent years. Anyway, the document concerned serves as a nucleus of operating advance, and the whereabouts or the status of the document is reflecting progress of the business concerned.

[0005] Various kinds of data, such as a related document, statistical materials, and a drawing, are attached to the above-mentioned operating document in many cases. However, as mentioned above, in the former, service of plurality [processes / a series of /

operating], and since it was specifically built on application (application program) or a database (database system), it was difficult [it] to share or exchange information between individual systems. For this reason, in fact, the information relevant to the business concerned was printed on paper, and attaching it was performed if needed.

[0006] Of course, if the special software which connects them between each system is built, it is possible to secure the relation between individual systems. However, it is difficult for such customize to generate many costs burdens, and to deal with specification modification of an individual system etc. flexibly.

[0007] The workflow managerial system is indicated by JP,10-326314,A. In this system, the document which is a processing object is electronically circulated among each person in charge persons according to flow control information including the process definition which described the contents of processing, a procedure, persons in charge, and those decision rules, the circulation situation of a document, a processing situation, etc. Here, a process definition is referred to when making the status of a document change.

[0008] Moreover, describing the circulation path of the document in an electronic document is indicated by JP,9-282250,A. The system corresponding to a workflow is indicated by JP,8-320901,A and JP,10-111888,A.

[0009] Furthermore, it is indicated by JP,10-105623,A about hierarchization of a workflow, and the matter which does not relate a specific man with JP,8-161393,A directly to business, but associates an abstract role to business is indicated.

[0010] However, between the clients and databases which use carrying out unitary management of various kinds of documents being conscious of an operating process and application, or it for any above-mentioned reference, lessons is taken from performing the data exchange flexibly, and it is not indicated.

[0011] This invention is made in view of the above-mentioned conventional technical problem, and the purpose is to realize rational document handling while it unifies the various document services (system) in connection with an operating process and supports an operating process.

[0012] Other purposes of this invention connect the existing various applications and a variety of existing databases mutually, carry out integrated management, and are to realize promotion of use of a document, and unitary management of a document.

MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, (1) This invention At least one client using a document, and at least one database which manages a document, With the Management Department which does integrated management of various kinds of documents which are the systems formed between ** and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which *****, and said client and said management section, It is characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[0014] According to the above-mentioned configuration, a document service integration system is formed between at least one client and at least one database (database system), and those services (namely, various kinds of application (application program) and various kinds of databases which are used by the client) are unified on a network by the integration system concerned. Moreover, according to an operating process, integrated management of two or more documents managed by the database is carried out.

[0015] The 1st interface section is established, and the interface between the management section and a client (application used by the client in a basic mode) becomes variously possible [connecting the client (or application) of the number of arbitration], as long as it has the interface which suits the 1st interface section with this means. The interface between the management section and a database can connect [various and] the database of the number of arbitration, as long as the 2nd interface section is established and the 2nd interface section is suited with this means. It is desirable that it can be made to carry out here plug-in of the facility handler which establishes the interface between it and the management section individually for every database to connect. In this configuration, the 2nd interface section will consist of a number equivalent to the number of a database to unify by this system, or that kind of number of facility handlers.

[0016] According to the above-mentioned configuration, two or more systems are made to cooperate mutually, and a new operating system can be constituted. And it becomes possible to carry out integrated management of the various documents managed by two or more databases of a different kind on the basis of an operating process. That is,

unitary management of two or more documents which exist dispersedly is carried out, and such a document can be used from various KURAIANTON. Therefore, from a client, since various kinds of documents on a system seem to be managed by the single database, a unific access means can be offered to each client. Since the existing system (service) can be used especially as it is, it is advantageous in respect of cost, and excels in the flexibility and expandability of a system. For example, it is promoted one layer of share nearby of the information in a firm.

[0017] In addition, various kinds of electronic multimedia data (the text data used especially on business, drawing data, image data, etc.) are contained in the concept of a document. Moreover, various kinds of applications can be constituted as a resource managed by some document service integration systems or it, and become possible [sharing each application by two or more clients] in that case. In that case, actuation of a document may be performed with the application on a document service integration system, and a client can also be provided with the activation result, or the function of all or a part of applications on a document service integration system may be transmitted to a client, and a document may be made to process with the processing facility on a client. Or application required for each client may be carried from the beginning, and a document may be made to pass and process to the application. That is, according to various kinds of conditions, a system configuration can be changed suitably.

[0018] (2) In the above-mentioned configuration, said Management Department has desirably the 1st table on which the correlation definition of two or more documents was stored for every operating process, and said processing section processes said document actuation demand according to said correlation definition.

[0019] Two or more documents (for example, a draft document, the original design drawing, the design drawing after modification, a manual, instructions, management information, etc.) which are concerned with the operating process for every operating process according to the above-mentioned configuration relate mutually, and it is *****. That is, the document set for every operating process is constituted.

[0020] (3) In the above-mentioned configuration, said processing section has desirably the function to perform document retrieval, according to said correlation definition. According to this configuration, according to a correlation definition, it becomes possible from a certain document to search other documents relevant to it, to search all the documents used in a certain operating process, etc. Of course, a client side does not need to be exceptionally conscious of the actual whereabouts or the registration attribute of each document in such retrieval.

[0021] (4) In the above-mentioned configuration, said processing section has desirably

the function which carries out batch print of two or more documents associated mutually according to said correlation definition. According to this configuration, it becomes possible to carry out batch print of two or more documents which constitute all in connection with a certain operating process, or its part, and a user burden is mitigated sharply.

[0022] (5) In the above-mentioned configuration, said Management Department has desirably the 2nd table on which the status transition definition in an operating process was stored, and said processing section processes said document actuation demand according to said status transition definition. According to this configuration, it replaces with managing the status on an operating process (condition) on the basis of people (person in charge) like before, and it becomes possible to manage the status on an operating process on the basis of a document.

[0023] (6) In the above-mentioned configuration, said Management Department has desirably the 3rd table on which the definition of the correspondence relation between a role name and a user name was stored, said role name can be described for said status transition definition, and said processing section processes said document actuation demand according to said status transition definition and said correspondence relation. According to this configuration, an abstract role name can describe the conditions of status transition. Therefore, what is necessary is to rewrite only the contents of the 3rd table, even if a person in charge is changed. Here, role (roll) names are abstract names, such as an implementer, an acknowledgement person, a manager, an I/O operating person in charge, and a user. A user name is a concrete name of a person (or the ID) or a group name (or the ID) which makes them a component.

[0024] (7) Desirably, set in the above-mentioned configuration and said Management Department has the 4th table on which the definition of the data-format conversion between two or more applications was stored, and said processing section changes into the document of the 2nd format the document of the 1st data format generated with the 1st application according to the definition of said data-format conversion, and passes the document of the 2nd data format concerned to the 2nd application. In this configuration ***** and each application, it becomes possible to always receive a document in the data format which can process it. And the result can be used by the client.

[0025] (8) Desirably, in the above-mentioned configuration, said Management Department has the 5th table on which the definition of the open range of each document was stored, and said processing section performs access restriction to a document according to the definition of said open range. According to this configuration,

according to the contents of the operating process, or the property of a document, the open range can be set up free, and security of a document can be planned.

[0026] (9) In the above-mentioned configuration, said management section has desirably the log Records Department which records the log about a series of document actuation in an operating process. According to this configuration, since the log is recorded about each actuation, that log is analyzed and it becomes possible to improve an operating process etc.

[0027] In order to attain the above-mentioned purpose, (10) Moreover, this invention A document is connectable with two or more clients used on [various] application. With and the Management Department which does integrated management of various kinds of documents which are systems connectable with two or more databases which manage a document, and are managed by said database according to an operating process The processing section which processes the document actuation demand from said client, The 1st interface section which establishes the interface between the management section which *****, and said application and said management section, It is characterized by including the 2nd interface section which establishes the interface between said databases and said management sections.

[0028] According to the above-mentioned configuration, the application of the number of requests and the database of the number of requests can be connected, those services are unified, and it becomes possible to carry out unitary management of various kinds of documents which exist in two or more databases.

[0029] (11) Said 1st interface section has desirably the function to interpret the instruction in accordance with predetermined application interface agreement.

[0030] (12) In the above-mentioned configuration, said 2nd interface section is desirably constituted by two or more facility handlers formed corresponding to each database.

[0031] (13) The above-mentioned management section is desirably constituted by the software as middleware. Moreover, the 1st interface section and the 2nd interface section are also constituted by software. Those software is stored in the storage on a computer system, and is performed by CPU. Moreover, you may make it install those software by the media of a portable mold, or communication link to the store.

[0032]

[Embodiment of the Invention] Hereafter, the suitable operation gestalt of this invention is explained based on a drawing.

[0033] The suitable operation gestalt of the document service integration system concerning this invention is shown in drawing 1, and drawing 1 R> 1 is the schematic diagram showing the whole configuration.

[0034] In drawing 1, the document service integration system 10 is a system for carrying out integrated management of two or more documents which unify on a network two or more services (system) used in 1 or two or more operating processes, and moreover relate to an operating process. Two or more client systems 12, two or more operating databases 14, and ** are connected to the document service integration system 10 so that it may be illustrated.

[0035] Here, each client system 12 has the WEB browser 36. The user interface is built by both this WEB browser 36 and below-mentioned WEB server 30.

[0036] Like the after-mentioned, two or more operating applications 34A, 34B, and 34C of a different kind or of the same kind are used in execution of a certain operating process 200. In the operation gestalt shown in drawing 1, those operating applications 34A, 34B, and 34C constitute some document service integration systems 10, or integrated management is carried out by the system 10 concerned.

[0037] In addition, the function of all or a part of operating applications can be transmitted if needed to each client 12, a document can also be processed using the processing facility of each client 12, and application required for each client 12 can also be carried from the beginning.

[0038] Moreover, two or more documents managed in execution of a certain operating process by two or more operating databases 14 of a different kind or of the same kind are used. As mentioned above, integrated management of such two or more databases 14 is carried out by the document service integration system 10.

[0039] The document service integration system 10 is constituted in the example shown in drawing 1 as resemble a management system 16, the 1st interface sections 18 (this example ** API service 32) and 1 or two or more applications 34A, 34B, and 34C, the WEB server 30, the 2nd interface section 20, the primary database 22, and the output service (OPS) 24. Incidentally, input service (not shown) etc. may be prepared if needed.

[0040] Here, the WEB server 30 constitutes a user interface with the WEB browser 36 as above-mentioned. Specifically, the WEB server 30 offers service of browsing processing of a document etc. according to the directions from the WEB browser 36. A HTTP protocol is used in the communication link between them.

[0041] On an operating process, two or more operating applications 34A, 34B, and 34C are the programs for performing document handling, and can carry various kinds of things on a system 10. The document operating instructions from the client system 12 are passed to each applications 34A, 34B, and 34C through the WEB server 30 as mentioned above. The operating applications 34A, 34B, and 34C can acquire the document which exists on one of the operating databases 14 by calling API which the

API (application interface) service 32 offers. mediation of this API service 32 -- the operating applications 34A, 34B, and 34C -- (the client system 12 side -- the same --) -- a required document can be acquired in a required format, without being conscious of the whereabouts and the attribute of a document. Moreover, a difference of the format between applications is also absorbed by the API service 32.

[0042] As mentioned above, the operating applications 34A, 34B, and 34C process and interpret the actuation demand received through the WEB browser, and offer desired service by calling API. That is, the API service 32 offers the interface for actuation of the call to a document, registration, etc., retrieval of a document, log management, etc., in order to realize document handling in the operating applications 34A, 34B, and 34C. In addition, when each client machine 12 performs a certain actuation to a document, the command in accordance with the API agreement defined beforehand will be specified, and the command concerned will be interpreted by the API service 32. Specifically, offer of the service from the management system 16 which received the interpretation result is received.

[0043] Of course, the configuration of the 1st interface section 18 shown in drawing 1 is only an example, and as long as the interface between a management system 16 and the operating application 34 is establishable besides this, it can also use other interface modules.

[0044] On the other hand, the 2nd interface section 20 is a means to establish the interface between a management system 16 and each operating database 14. In this operation gestalt, the interface (service program interface (SPI)) is established by the facility handler 28 formed every operating database 14. Here, the facility handler 28 is constituted so that the thing corresponding to each operating database 14 can be added by the plug-in system. Therefore, even if the operating database of a different kind is intermingled, it becomes possible by adding the facility handler 28 to carry out unitary management of those operating databases with a management system 16.

[0045] Incidentally, the primary handler 26 is a facility handler of the dedication for establishing the interface between the primary databases 22 which constitute the document service integration system 10.

[0046] Therefore, according to the above-mentioned 2nd interface section 20, two or more existing operating databases in a firm are unified, for example, and it becomes possible to carry out unitary management. That is, data of a different kind, such as text data, drawing data, or an image data, also become possible [managing all together].

[0047] OPS24 is service which outputs document data by the demand from a management system 16. For example, when performing printing of the document set

mentioned later, this OPS24 functions.

[0048] A management system 16 is a system which carries out integrated management of two or more documents for every operating process according to various kinds of abstraction models, such as a data (document) model, a process model, a user model, an area model, and an interchange model, in this operation gestalt. This management system 16 has various functions, and the example of representation of each of those functions is shown in drawing 2 as a block diagram. Incidentally, various kinds of definitions based on each model mentioned above are stored on the primary database 22, and use and explain drawing 3 R> 3 later about the example of those definitions.

[0049] In addition, in the former, although the status in an operating process was managed on the basis of people, in this operation gestalt, the status on an operating process is managed on the basis of the document. This is also explained in full detail behind.

[0050] In drawing 2, the management system 16 shown in drawing 1 is divided roughly, and consists of a processing module group 202 and an administrative module group 204. However, completely [each module explained below / either the processing module group 202 or the administrative module group 204], it does not say and each module has [the group then] both sides of a processing facility and a function manager.

[0051] First, the document actuation module 40 is explained. The creation (registration) function 42 which this document actuation module 40 has is a function which creates the document set which consists of 1 or two or more documents which are constituted per operating process. Moreover, the reference function 44 is a function to refer to the contents and the attribute of a document by which the reference demand was advanced. Moreover, the Delete function 45 is a function to delete the document set registered. Moreover, the updating function 46 is a function to change the attribute of a document set, and the exclusive control function 48 is a function which blocks other edits with the so-called check-in check-out temporarily at the time of edit of a document set.

[0052] The retrieval module 50 has the function to search a document using the attribute of arbitration which the document has. For example, it is possible to search all that are used in a certain operating process or some two or more related documents, or to search other documents from a certain document belonging to a certain operating process. Incidentally, it is possible to restrict, when it has the function concerned, the facility, i.e., the database, which is keeping the document, the information retrieval, i.e., the full-text search, in a document, and to perform.

[0053] The processing definition module 52 is a module with the function to define the processing to a document, and to manage and perform it. First, the processing

additional function 54 is a function to add the processing to a document. Next, the processing Delete function 56 is a function to delete the processing already defined. Moreover, the processing execution function 58 is a function to perform processing registered.

[0054] The status administrative module 60 defines the conditions of the state transition on the operating process of a document set, and has the function which controls the access privilege to a document based on it. Specifically, the status definition function 62 is a function to define how between the condition that a document set can take, and its condition is made to change. It is the function to set up based on which process a document set carries out the state transition of the process setting up function 64. The status modification function 65 is a function to change the condition that the document set has. The access privilege control function 66 is a function for controlling the processing which the document set has and which can be performed for every condition.

[0055] The relationship management module 68 is a module for accessing a related document by holding the relation between each document which constitutes a document set, and following it if needed. The related setting up function 70 which it has is a function to set up relation among two or more documents by making a document set into a framework. The related Delete function 72 is a function to delete the relation between documents. The related navigation function 74 is a function for accessing the document of connection with reference to the already set-up relation.

[0056] Version control and the processing module 76 hold the modification hysteresis of a document set. First, the bar SHON generation function 78 is a function which generates a high version, and the latest version acquisition function 80 is a function for taking out the newest version about the specified document. Moreover, the assignment version acquisition function 82 is a function which takes out the assignment version about the specified document.

[0057] The scope function manager module 83 sets up the retrieval range and the open range of a document. The service compartment communication module 84 is a function for aiming at the communication link between each component which constitutes the system concerned. A data transfer function is also included in it.

[0058] The service administrative module 86 has the function to memorize the error which manages initiation and a halt of service and which was functioned and generated, the function which records various kinds of actuation, the function to back up data, etc.

[0059] A plug-in module 88 functions, when adding the facility handler 28 shown in drawing 1. Each module shown in drawing 2 is an example, and can carry various kinds

of modules 89 besides it.

[0060] According to the above-mentioned management system 16, it is possible to deal with the document which exists on one of the databases 14 on the assumption that establishment of the interface in the both sides by the 1st interface section 18 and the 2nd interface section 20 free, and it is possible to offer the service corresponding to it to various kinds of document actuation demands from the client system 12. Especially, from the client system 12, when there is an acquisition demand of the document set relevant to the operating process 200 through operating application, by the management system 16, two or more documents which constitute the document set concerned are acquired from two or more operating databases 14, and the client system 12 is provided with them through application etc. Therefore, the document concerned can be referred to without being conscious of the actual whereabouts and its registration attribute of the document made into the purpose at the client system 12 side, and it becomes possible to promote informational share·ization further.

[0061] The management system 16 has managed various kinds of data abstractly based on a data (document) model, a process model, etc., as mentioned above, and it explains them below using drawing 3 about the data managed such.

[0062] The example of a data configuration managed by the management system 16 is shown in drawing 3 . The structure of the data especially stored on the primary database 22 is shown. The DS shown in drawing 3 is an example, and, of course, can adopt various kinds of DS besides this.

[0063] In drawing 3 , the document (set) definition 90 is created for every operating process based on a document model. Two or more documents used in a certain operating process are defined as a document set by this document definition 90, and, moreover, that document set is managed in relation with an operating process. When it explains concretely, ID100 is the identifier of a document set and the status 102 is the current status of the document set concerned, i.e., the status of the present condition of an operating process. The process definition 92 has the configuration explained later, and process control in the document base is realized by relating this process definition 92 with the document definition 90 directly.

[0064] URL104 is a pointer which constitutes a document set and which expressed the whereabouts for every document. For example, the address of the document stereos 108-110 is specified by URL104, and the address of the document stereo 106 which exists in the primary database 22 by URL104 is specified.

[0065] It is possible to divide roughly into the document definition 90, and for the system attribute beforehand defined on the system and the user attribute defined by the

user to be contained in it incidentally, and to manage various kinds of information using the latter attribute. That is, the document definition 90 shown in drawing 3 is an example.

[0066] The process definition 92 is directly related with the document definition 90, as mentioned above, and this process definition 92 is created based on a process model. The status 112 expresses each status in an operating process, i.e., the status of a document, and the following status 114 expresses the status which should shift when the transition conditions 116 are fulfilled. The role name 118 is defined by the custom 94 mentioned later.

[0067] Therefore, unless actuation in which the user who fulfills the conditions of the role name 118 fulfills the transition conditions 116 in a certain status is performed according to this process definition 92, the shift to the following status from a certain status is not performed. Process control becomes possible and access restriction is realized by this at coincidence.

[0068] Custom 94 defines the correspondence relation between the role name 118 and a user name 120. It is an abstract person-in-charge name, and a user name 120 is a concrete user name or user ID, or the role name 118 is the group of those concrete user names, or its ID here. Such custom 94 is created according to a user model.

[0069] The process log 99 is equivalent to record of various kinds of actuation to the document performed on the operating process concerned for every operating process. The area definition 96 defines the open range and retrieval range of a document according to an area model. For example, it is possible to set up two or more area hierarchical in the top document tooth space in drawing 4, and access restriction etc. can be performed using such an area definition.

[0070] The interchange definition 98 defines conversion of the data format between applications, and is created according to an interchange model. It becomes possible to receive a document in various kinds of applications in the data format which suits it using such interchange definition 98. Incidentally, hierarchical management is [in / it is possible to form the so-called nest condition of a document set, and / between document sets] realizable if other document sets are specified as URL104 in the document definition 90.

[0071] As mentioned above, the example of a configuration shown in drawing 3 is an example for explaining an operation gestalt, when it constitutes an actual system, can manage an object hierarchical, and can constitute the definition which followed each model by this.

[0072] The document actuation module 40 shown in drawing 2 carries out the

processing using the document definition 90 shown in drawing 3. Moreover, the retrieval module 50 carries out the processing using the document definition 90, the area definition 96, etc. The status administrative module 60 is a module which mainly deals with the process definition 92. The relationship management module 68 performs processing in connection with the document definition 90. Each information which also shows the other module shown in drawing 2 to drawing 3 if needed is referred to and used, and the function is demonstrated.

[0073] Next, the typical example of processing of a management system 16 is explained using drawing 5 and drawing 6.

[0074] An example of the processing at the time of document acquisition is shown in drawing 5. First, in S101, the processing demand of the specific document published from the client system 12 is received by the WEB server 30, and the acquisition demand of a specific document is processed by the API service 32 through application (S102). Next, in S103, the access privilege and status transition conditions about the document (or document set) which became a candidate for acquisition with the management system 16 are checked. Here, when it is access from a thing without an access privilege or the status of the document will be in the condition which can be perused, error processing is performed in S104. On the other hand, after an object document is acquired from one of the operating databases 14 and data conversion is performed in S106 in S105 if needed by the management system 16, record of management information (for example, log information) etc. is performed by S107, and it is provided in the client system 12 by which the object document concerned published the acquisition demand in S108.

[0075] It is not necessary to grasp the whereabouts and its registration attribute of an object document as mentioned above to a client system side, and to publish an acquisition demand, and it becomes possible in the above processings to acquire an object document very simple. Moreover, since it sees in acquisition of such an object document from the operating process to which the object document concerned belongs and an access privilege, the status, etc. are checked, it is also possible to secure security. Moreover, there is an advantage that process control can be performed certainly.

[0076] An example of the processing at the time of document set printing is shown in drawing 6. First, in S201, the set printing demand from a client is received with the WEB server 30. In S202, it is confirmed about the client which the demand was processed by the API service 32, and published the demand with the management system 16 in S203 whether there be an access privilege or be in the status which can be printed. Here, if the result of the check is negative, error processing will be performed in

S204. On the other hand, if the result of the check is affirmative, S205 sets, an object document set is acquired from one of databases, and they will be collectively printed by those object document sets.

[0077] Therefore, the complicated activity that a user prints each document individually, respectively and bundles it can be canceled like before, and there is an advantage that an operating activity is executable promptly and simple. Moreover, since the check of an access privilege or the status is performed as mentioned above, while security is certainly securable, there is an advantage that the printing management on an operating process can be put into practice.

[0078] Drawing 5 and drawing 6 illustrate a part of functions which a management system 16 has, and as shown in drawing 2, of course, the management system has various functions. Anyway, various document services are integrated by the operation of the 1st interface section 18 shown in drawing 1, and the 2nd interface section 20, and since document management is moreover performed from a viewpoint of an operating process, the rational document management exceeding mere document management stuck to business is realizable. Therefore, according to the document service integration system 10 concerning this operation gestalt, there is an advantage that the completely new operating system which is not in the former can be built, and an efficient operating process can be built on it. In addition, the document service integration system concerning this operation gestalt is available as a synthetic operating support system which includes a maintenance, product repair, etc. in a product selling pan from a product development. In one side, it can suit also about small-scale business and there is an advantage of being rich in expandability and flexibility.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the concept of the document service integration system concerning this invention.

[Drawing 2] It is the block diagram showing the concrete example of a configuration of the management system shown in drawing 1.

[Drawing 3] It is drawing showing the structure of the data on the primary database shown in drawing 1.

[Drawing 4] It is drawing showing an example of an area definition.

[Drawing 5] It is the flow chart which shows the processing at the time of document

acquisition.

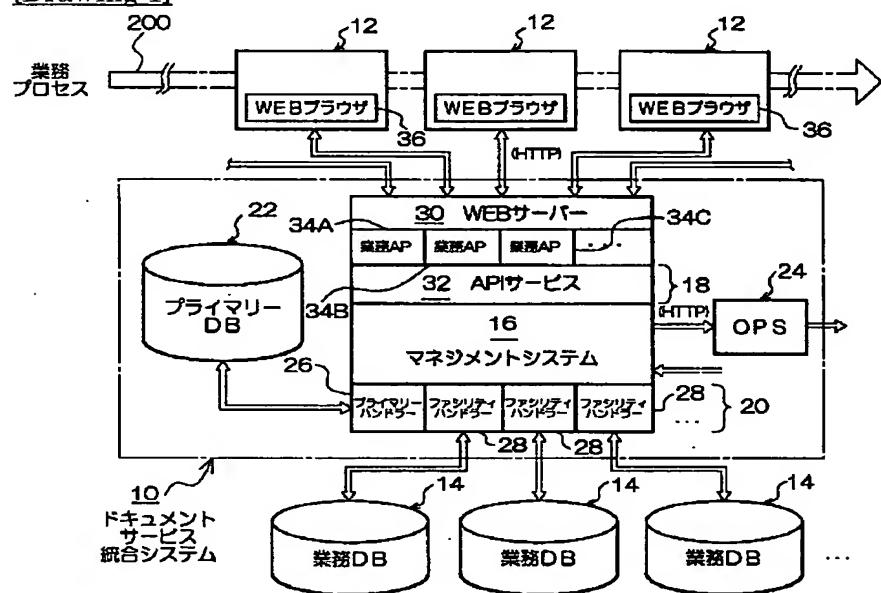
[Drawing 6] It is the flow chart which shows the processing at the time of document set printing.

[Description of Notations]

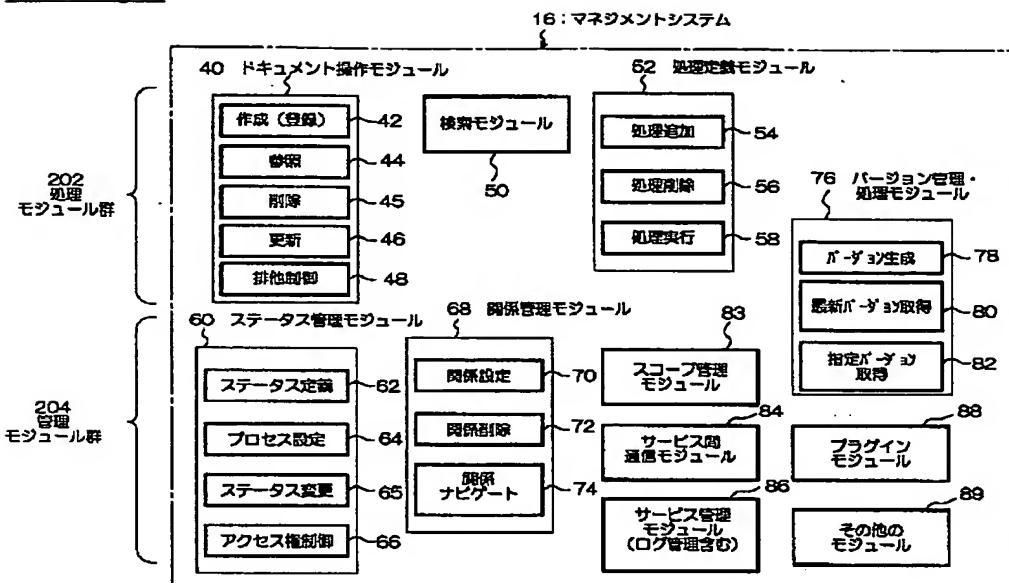
10 A document service integration system, 12 A client system, 14 An operating database,
16 A management system, 18 The 1st interface section, 20 The 2nd interface section, 22
A primary database, 24 Output service (OPS), 26 A primary handler, 28 facility handler.

DRAWINGS

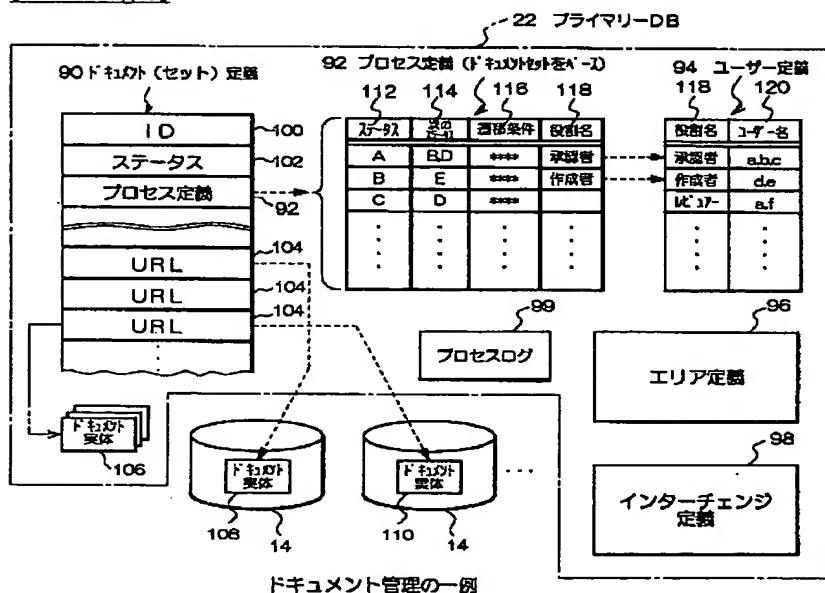
[Drawing 1]



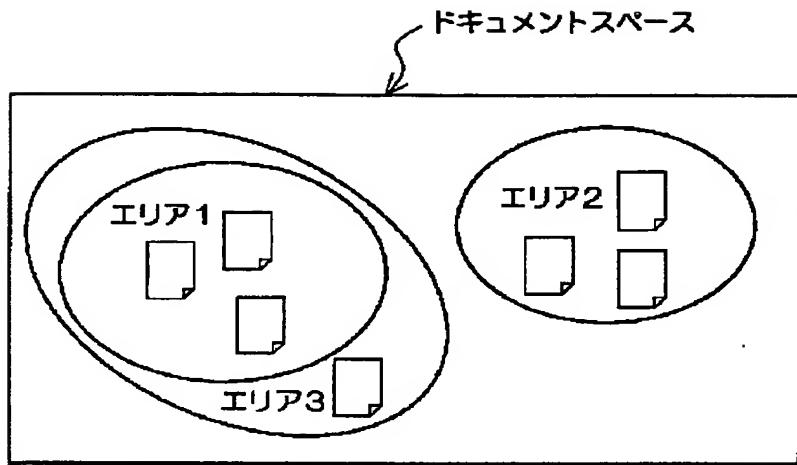
[Drawing 2]



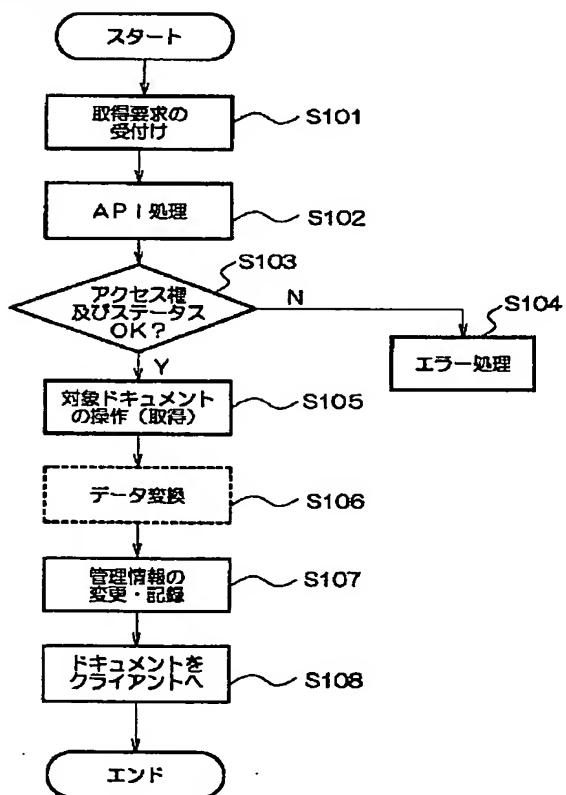
[Drawing 3]



[Drawing 4]

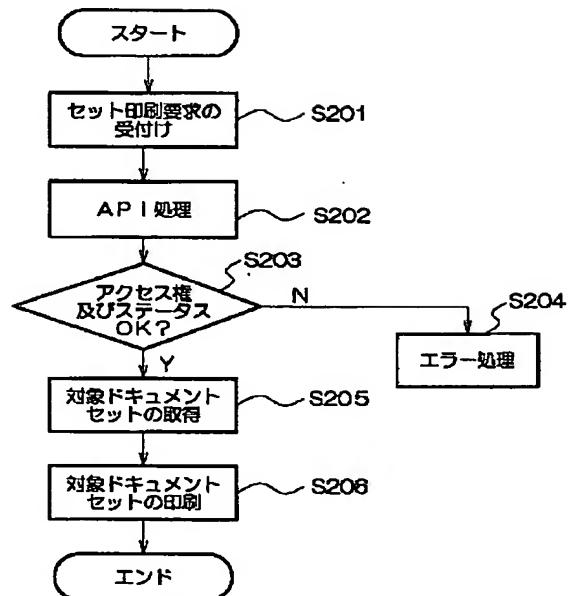


[Drawing 5]



ドキュメント取得時の処理の一例

[Drawing 6]



ドキュメントセット印刷時の処理の一例

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.